VOL. 180 No. 4 AMERICAN APRIL, 1954

MAY 25 1954
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Gas Journal

Are You Converting From A Low To An Intermediate Pressure System?

THEN INSTALL
ROCKWELL "173"
Meter Bar Regulators

NO NEW PIPING REQUIRED!

The simplest and most economical way to convert your domestic meter settings is to install Rockwell "173" meter bar regulators. Just screw them into the existing service piping and suspend your meters from their present swivels below.

You'll gain, too, through the superior degree of regulation the Rockwell "173" provides. A large area diaphragm, long helical spring plus control tube automatic boosting see to that. For utmost safety there's the option of a tamperproof internal relief valve.

Get full facts on this and other service regulators in the complete Rockwell line by writing today.

YOU CAN RELY ROCKWELL ON ROCKWELL

ROCKWELL MANUFACTURING COMPANY

PITTSBURGH 8, PA. Atlanta Boston Chicago Houston
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In Canada: Peacock Brothers Limited

THERE'S A ROCKWELL SERVICE REGULATOR FOR EVERY NEED

NO. 107
One Piece Body and Mounting, Internal Relief Valve (Optional) Large Bottom Vent (Optional)

NO. 107
with Mercury Seal

NO. 107
With Dead Weight Safety Valve

NO. 173
Detachable Universal Mounting, Internal Relief Valve (Optional) Large Bottom Vent (Optional)

NEW safety accuracy economy

RELIANCE SERIES 1400 REGULATORS

Large area passages from the orifice to the vent outlet for emergency gas escape in case of excess pressure.

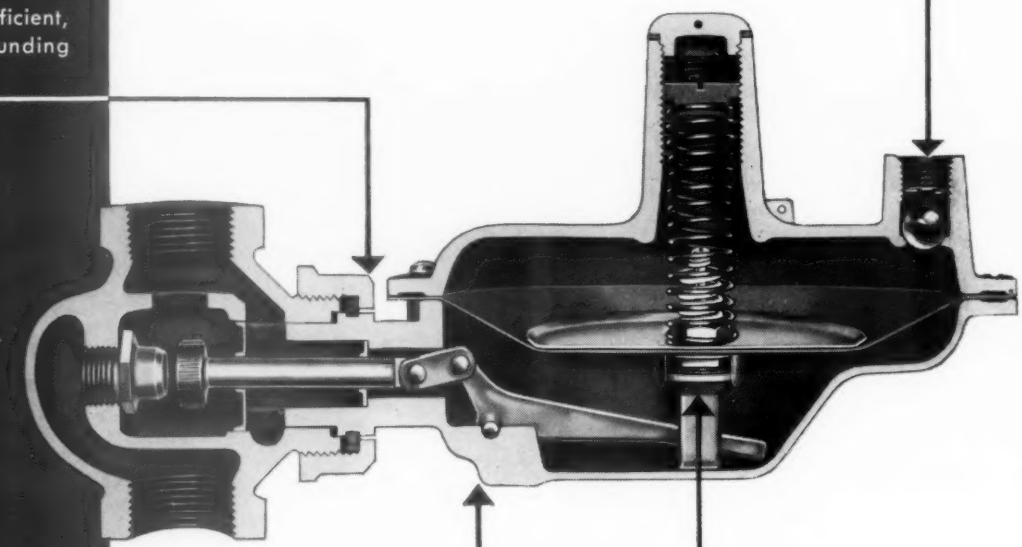
Sturdy neck section helps assure efficient, smooth, compounding action.

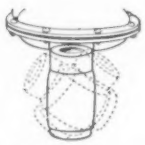
For inlet pressures to 100 lbs. per square inch.

Die-cast aluminum body and top.

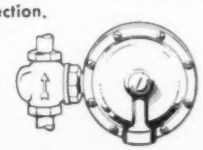
Rugged construction — no installation damage to exposed parts.

Built-in mechanical relief valve set to relieve at 14 inches of water.





Union type grey cast iron removable pipe section installs easily in close quarters at all angles — requires no alignment with diaphragm section.



Alternate large area screened, vertical diaphragm —vertical vent top construction positively prevents collection of water or foreign material on the diaphragm.

You will find Reliance Series 1400 Service Regulators are specially adaptable to conversion of low pressure systems to high pressures... engineered for precise pressure control over a wide range of flows and supply pressures. Write for full specifications.

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GENERAL SALES OFFICE: 1513 Race Street, Philadelphia • Albany
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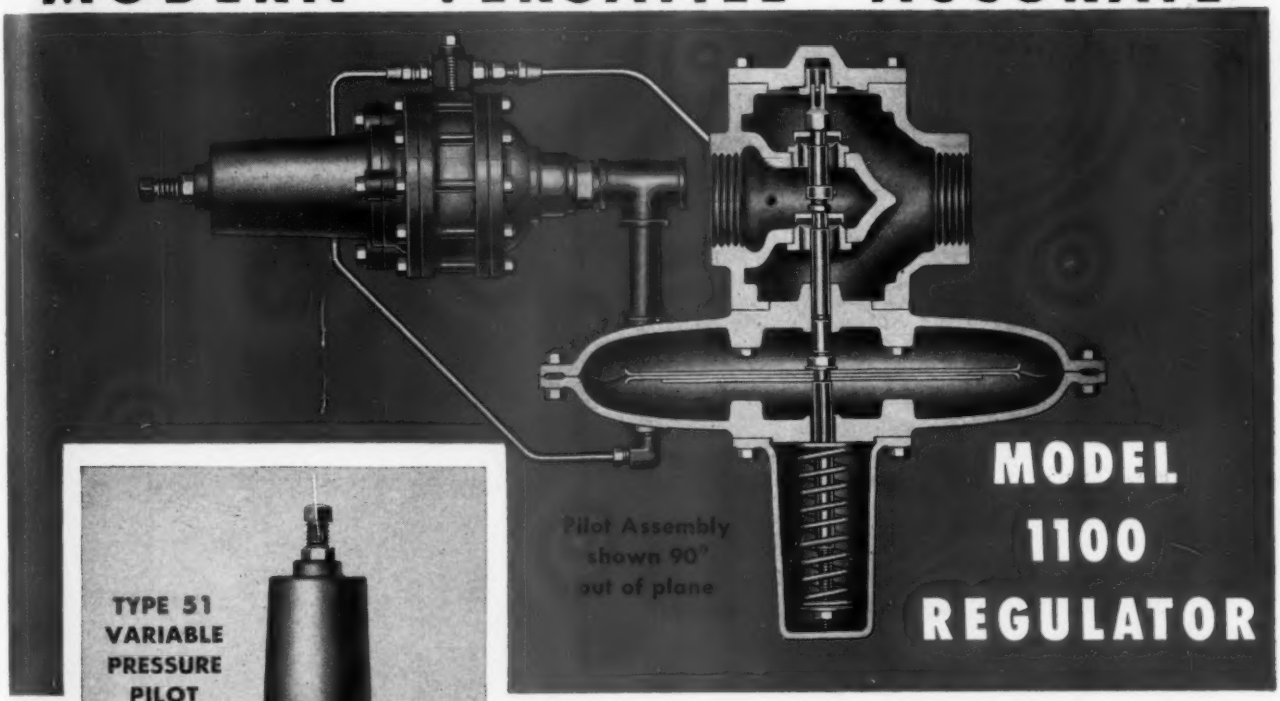
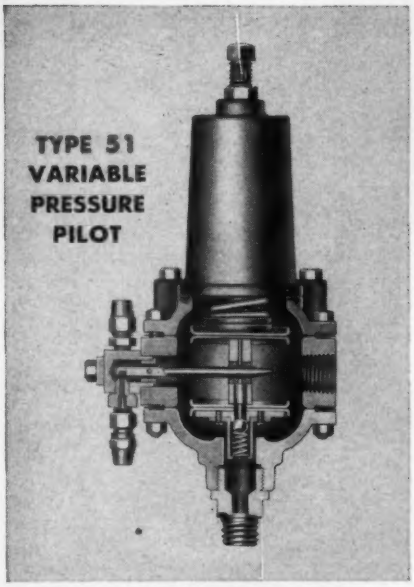
MAY 25 1954

Chaplin-Fulton

MODERN—VERSATILE—ACCURATE





• the heart of the MODEL 1100 assembly, insuring precisely accurate control over the complete flow range. • Unitized construction—valve lever and orifice as a unit are removed from the outside, without disturbing balance of assembly. The likely trouble spot—the orifice—is placed outside where you can get at it quickly—no internal tubes to clog. • Twin diaphragms remove as a unit. • Internal relief unit—guards against overpressure. • Spring unit—remove three screws to change springs. • Built for service. • Used for accuracy.

You can't buy, beg, borrow or steal a more versatile pressure regulator than MODEL 1100. Nor has traditional Chaplin-Fulton ruggedness, simplicity or accuracy been forgotten in this new modern design. Size—2" only.

Wider Application —Inlet Max.—250 psi. Outlet Range—1" to 75 psi or 50 to 150 psi.

Greater Capacity —24,000 CFH at 10 psi to ounces; 114,000 at 100 psi. Body contoured for flow.

Easier Maintenance—regulator or pilot can be serviced without disturbing the other. Quickly accessible orifices in both, easily renewable.

Simpler Installation—only one connection required. No complicated pins or toggles to adjust.

You can standardize on MODEL 1100 for a wider range of your industrial, commercial or distribution installations.

ACCURATE CP MFG CO DEPENDABLE

Chaplin-Fulton
MANUFACTURING COMPANY
Pittsburgh 25, Pennsylvania

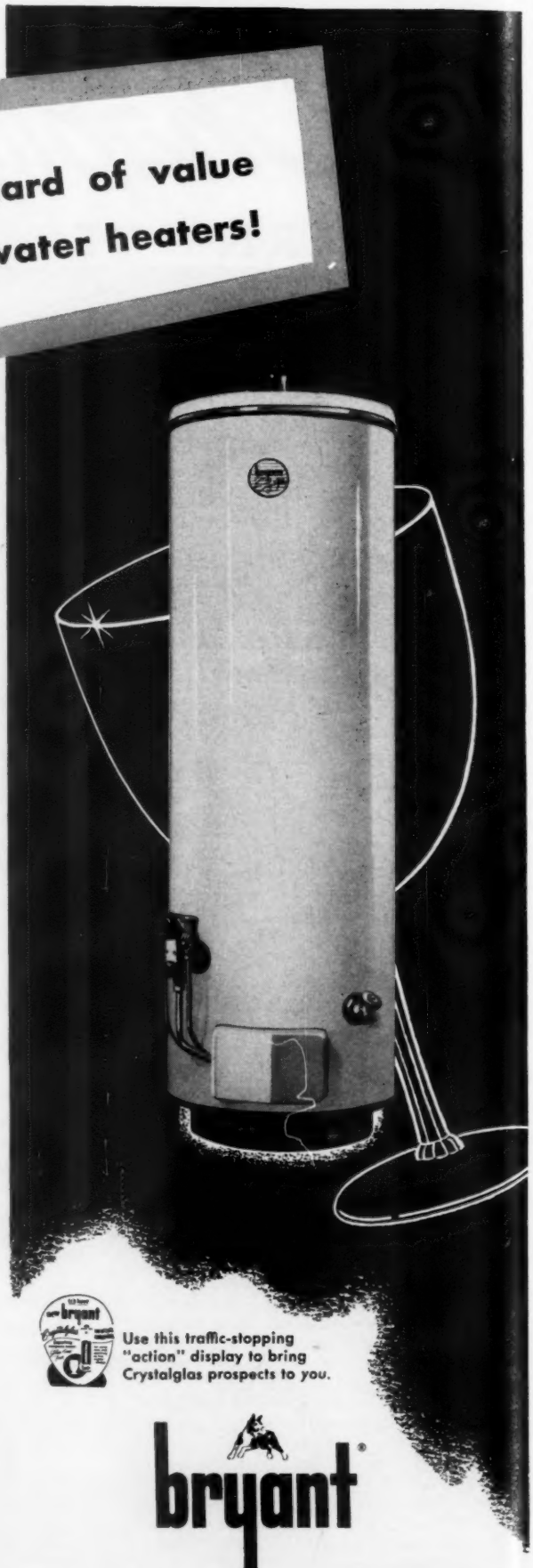
AMERICAN GAS JOURNAL, April, 1954. Vol. 180, No. 4. Published monthly (except October, then semi-monthly), by American Gas Journal Inc., at 73 Main Street, Brattleboro, Vt. Entered as second class matter January 24, 1950, at the post office at Brattleboro, Vt. under Act of March 3, 1879. Executive and editorial offices at 205 East 42nd St., New York 17, New York. Subscription prices, U.S. $3 per year; Canada $4; Foreign $10. Single copies 50 cents, except October 1 issue, which is not sold separately. Printed in U.S.A.

Here now! the new standard of value and profit in glass-lined water heaters!

bryant

Crystalglas
GLASS LINED ®

AUTOMATIC GAS WATER HEATER



The big news in gas is *Crystalglas* . . . the Bryant Water Heater that is ready now to break sales and profit records for you!

A Better Water Heater . . . 33% greater strength against seam leakage; new "hi-therm" formula glass lining; two-piece tank; the most positive immersion thermostat on the market; 100% safety shutoff as standard equipment . . . all these and many more features make *Crystalglas* the water heater most customers want and will buy.

Better Profit Opportunity . . . *Crystalglas* is sold through *dealers,* with complete warehouse inventory and on-the-spot service supplied by your nearby Bryant Distributor. It is competitively priced for volume sales—with full markup provision to assure you a maximum profit on each premium sale.

A Full-Fledged Sales Help Program . . . Compelling *Crystalglas* national advertising is already on the street, pre-selling for you. Your Bryant Distributor has available an unrivaled array of local advertising, point-of-sale, sales-training and follow-up material for your use on a co-operative basis.

A Ground-Floor Chance for You . . . The Bryant name, the Bryant sales and service policy, the unmatched features of Bryant's *Crystalglas* are just what you need to set a new high-water mark in hot-water profits this year. Get in touch with your Bryant Distributor now!

Use this traffic-stopping "action" display to bring Crystalglas prospects to you.

bryant

HEATING • AIR CONDITIONING • WATER HEATING

MAY 25 1954

AMERICAN Gas Journal
ESTABLISHED 1859

VOLUME 180 APRIL 1954 NUMBER 4

This month...

New England Gas Association's annual business conference, always a high-spot in our working-year, heard some plain-talk and pointed reminders of the dangers of complacency when Sheldon Coleman presented his Inventory for Action. The Gas Industry Development plan, he said, "doesn't mean a thing until it becomes a living part of the fabric of a company —manufacturer and utility." He stressed that the mutual fortunes of the two major segments of the industry are tied up with their ability to work together, putting aside petty grievances. Mr. Coleman's emphatic conclusion, "We can't wait forever. . . . Let's take unified action now," might very well be adopted by the gas industry as its most realistic slogan. His address is summarized, starting on page 47.

• • •

With our most sincere spirit of being a good-neighbor, we welcome to our pages Dr. M. Fernandez Romero of Buenos Aires, whose description of a new oil gas plant is presented on page 18.

• • •

One of the gas industry's really successful ventures into public relations is Columbia Gas System's motion picture, "Dan & Gus." With nearly 8,000 showings, during the past year and a half, it has been accorded honors and commendations by competent critics of the techniques for telling the public. See page 23.

Contents

Editorial: Another Look at Mrs. America 13

New England Gas Association Conference Hears About Urgent Need for Action 14

Considerations of Relief Valves on Customer Meter Sets in California—George M. Fox 16

Oil Gas is Produced by Newly-Developed Plant in Argentina—M. Fernandez Romero 18

How Seattle Gas Co. Plans Ahead with the City Engineer—M. C. Nutter 20

Wave of Refunding Operations Seen—John F. Falvey 21

Gas Company Rights and Liabilities Reviewed in Court Actions—Leo T. Parker 22

7,655 Showings of Columbia's Dan & Gus Tell Public of Utility Operating Problems 23

Old Days Recalled . . . from AMERICAN GAS JOURNAL— 90 Years Ago . . . 50 Years Ago . . . 25 Years Ago 24

American Gas Fundamentals: Pipeline and Network Gas Dispatching—S. A. Chadwell 25

News of the Gas Industry 29

New Bulletins 37

New Equipment 39

Gas Industry Calendar 44

AMERICAN GAS MERCHANDISING..... 45

Ruud and Utilities Hold Laundry Shows Promoting High-Temperature Water 46

Seriousness of Gas Industry Situation Demands Immediate and Urgent Action . . . Sheldon Coleman pleads with utilities and manufacturers to face facts-unite-fight 47

New Gas Appliances 49

Index to Advertisers 50

Hilding H. Carlson · Editor

Bernard W. Morris · News Editor

Charles R. Bellamy · Technical Editor

Arthur Rohman · Western Editor **John F. Falvey · Financial Editor**

AMERICAN GAS JOURNAL, established 1859, is published monthly except October, semi-monthly, by American Gas Journal, Inc., 205 East 42 St., New York 17, N. Y. ROBERT M. POE, President and Treasurer; P. M. MALONEY, Secretary.

ADVERTISING REPRESENTATIVES: John P. McDermott, Edwin J. Volckmann, 205 E. 42 St., New York 17, MU 6-4360; Urben Farley & Co., 120 S. LaSalle St., Chicago 3, FI 6-3074; Jack O. Hodges, 479 S. Holt Ave., Los Angeles 48, BR 2-3935; Geo. F. Haines, 681 Market St., San Francisco 5, DO 2-4475.

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With 100 years

Courtesy, Mobile Chamber of Commerce

This is Mobile, Alabama, known as the "City of Six Flags"

Bettmann Archive

This is Mobile as it looked shortly before Mobile Gas Service Corp. was founded over a century

MODERNIZED cast iron

of EXPERIENCE...
they must be right

MOBILE... installed cast iron gas mains 100 years ago... and installs them today!

Mobile, Alabama, gives due credit for its growth in population and industrial expansion to the progressive management of Mobile Gas Service Corp. A century ago, when the first cast iron distribution mains were laid, the population was about 30,000. Today, 405 miles of mains are required to service Mobile's quarter-million population. Nearly all are cast iron mains *(see cut)*.

A customer who buys your product year after year—generation after generation—is a "jewel beyond price". Be you merchant or manufacturer, you might count such customers on the fingers of your two hands. Yet, the cast iron pressure pipe industry can count more than 60 of them — utilities that have been buying cast iron pipe for water or gas mains (or both) for 100 years.

Today's *modernized* cast iron pipe—centrifugally cast and with standardized mechanical joints—is even more economical and efficient. The pipe is stronger, tougher, more uniform in quality. The mechanical joints are bottle-tight for usual gas pressures and for all types of gas.

Cast Iron Pipe Research Association, Thos. F. Wolfe, Managing Director, 122 So. Michigan Avenue, Chicago 3, Ill.

CAST Q IRON ®

The Q-Check stencilled on pipe is the Registered Service Mark of the Cast Iron Pipe Research Association.

In good condition after 100 years of service, this cast iron distribution main is still functioning in Mobile, Ala.

pipe FOR MODERN GAS DISTRIBUTION

MUELLER "E-4" DRILLING MACHINE

MUELLER

NO-BLO

Method

This is another of a series showing the proved application of Mueller No-Blo fittings and machines used for their installation.

APPLY Safely

SERVICE LINE STOP-OFFS

Stop-offs up to 125 psig may be made at any point on a service line by using an "E-4" Drilling Machine and a Service Line Stopper Fitting welded to standard steel pipe. Sizes ¾" through 1¼".

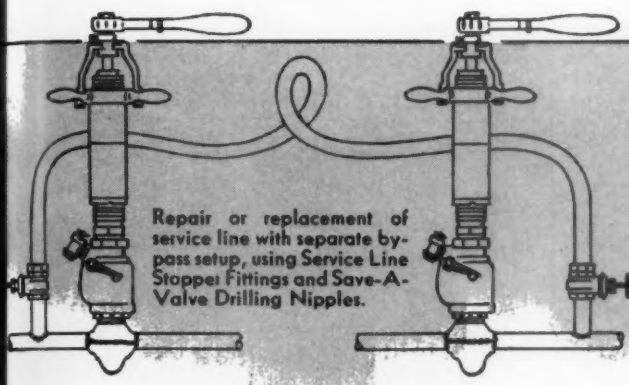
INSTALLING STOPPER FITTINGS

First, the two halves of the fittings are tack welded together on the pipe, then positioned and securely welded. The welds are then air-tested for leakage. The "E-4" Machine and Control Chamber, or Gate Valve, are mounted and a hole is then drilled completely through the service line.

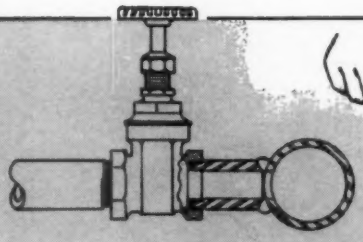
The "E-4" Machine is removed and the drill is replaced by a rubber stopper. The "E-4" is remounted and the stopper is expanded by using the feed mechanism of the Machine.

After completing repairs, the stopper is withdrawn and the "E-4" removed. The stopper is now replaced by a plug-inserting tool and completion plug, the "E-4" is remounted and the plug is screwed onto the top of the fitting. The Machine and Control Chamber, or Gate Valve, are removed and the cap is screwed into the fitting to provide a double seal.

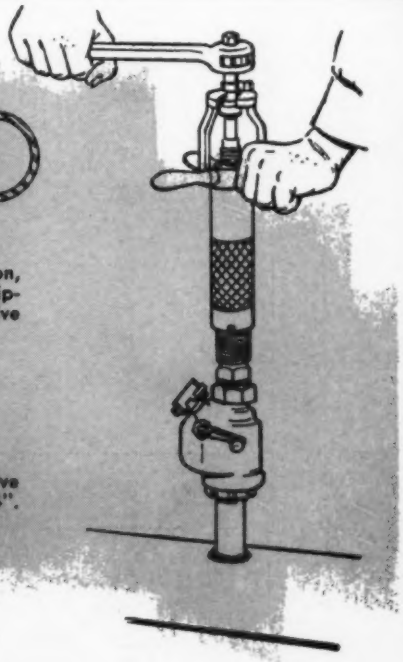
ND INSTALL MUELLER NO-BLO FITTINGS ...WITH THE "E-4" DRILLING MACHINE



Repair or replacement of service line with separate by-pass setup, using Service Line Stopper Fittings and Save-A-Valve Drilling Nipples.



Temporary lateral connection, using Save-A-Valve Drilling Nipple to provide for salvage of valve and line.

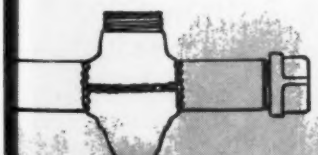


Drilling through Save-A-Valve Drilling Nipple with an "E-4".

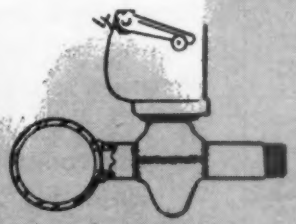
STOPPER FITTING APPLICATIONS

Service Line Stopper Fittings permit any kind of repair or replacement of a service line under pressure, without loss of gas.

An example of stopper fitting application is the transfer of a service from an old main to a new main under pressure without loss of gas or interruption to other services on the main.

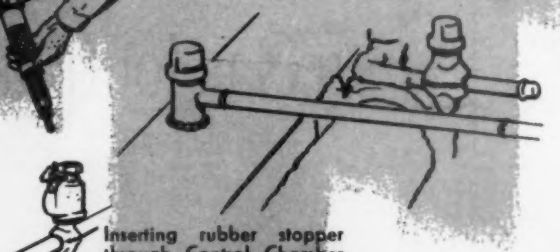


ead-end extension or aban-nment of a line, using a rvice Line Stopper Fitting.



Lateral connection not requiring valve, but providing means of stop-off with Service Line Stopper Fitting and "E-4" Machine.

Transfer of house service, using Service Tee and Service Line Stopper Fitting.



Inserting rubber stopper through Control Chamber into stopper fitting with "E-4" Machine.

TEMPORARY CONNECTIONS

The "E-4" Drilling Machine is used with Save-A-Valve Drilling Nipples to make temporary or semi-permanent connections which the valve may be recovered when the connection is abandoned.

Save-A-Valve Drilling Nipples are available with welding inlets for steel pipe or threaded inlets for use with service clamps on steel or cast iron pipe.

An inner plug is inserted in the nipple under pressure with the "E-4" in the same manner as described for stopper fittings. With the plug in place, both Machine and valve are removed and the cap is screwed into place. The connection may be reused at any future time.

For additional information consult your No. 55 Catalog or your Mueller Representative.

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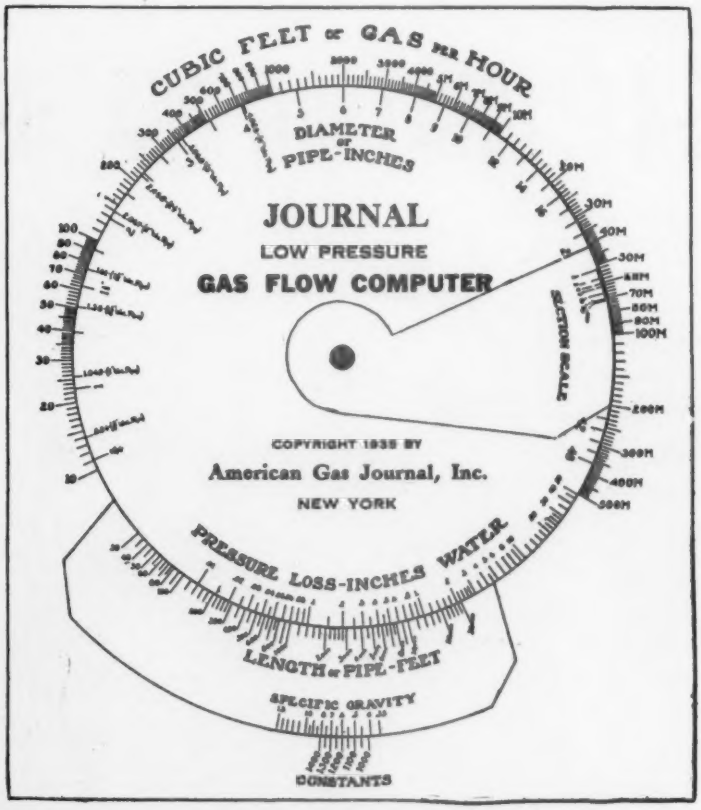

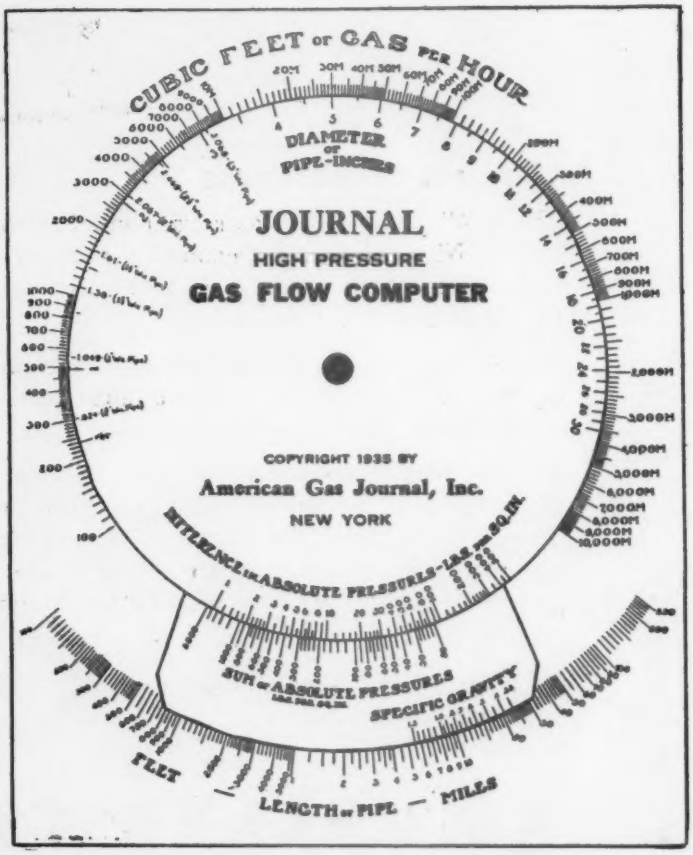

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ROCKWELL "1001" REGULATORS

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Maintaining a *level pressure* in a distribution system at all times is mighty important to a utility's welfare. That's why in the "1001" regulator, Rockwell engineering has provided the highest degree of control accuracy through a sensitive *power pilot* loading system. Durable construction and economical price make the Rockwell "1001" an exceptional value. And you will find uses for them everywhere. Smart distribution men now keep a stock at hand for regular jobs and emergencies. Write for bulletin 1059.

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GAS FIRED KILNS
SMALL DISTRIBUTION SYSTEM
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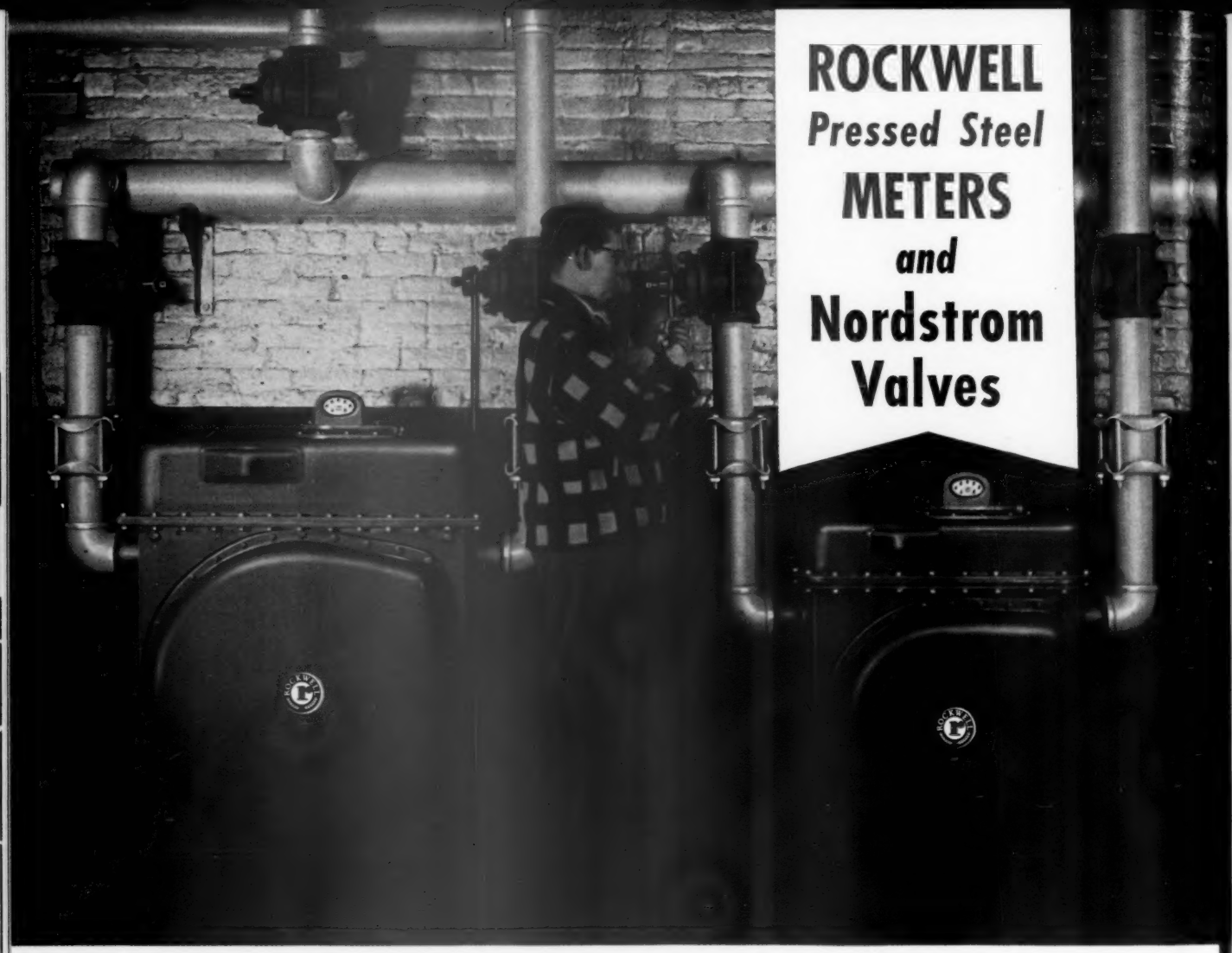

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BIG B.T.U. BIN —*that hugs a wall!*

When you want to install the most meters in the least space, that's another good time to turn to Rockwell. You can squeeze tall, slender Rockwell Pressed Steel meters into an absolute minimum of floor area—either strung out along a wall, or compactly manifolded side-by-side, in groups.

Either way you gain the additional advantage of a sturdy, pressed steel construction that provides full assurance of safety. And while giants in capacity these meters are comparatively light in weight. Made in two sizes as shown above, having capacities of 10,000 and 7,000 cfh, respectively, at 2-in. pressure absorption of 0.60 sp. gr. gas.

These meters can be fitted with either Combined Record gauges or Emcorectors to convert high pressure measurement to corrected volumes at any given base pressure. Write for bulletin 1085.

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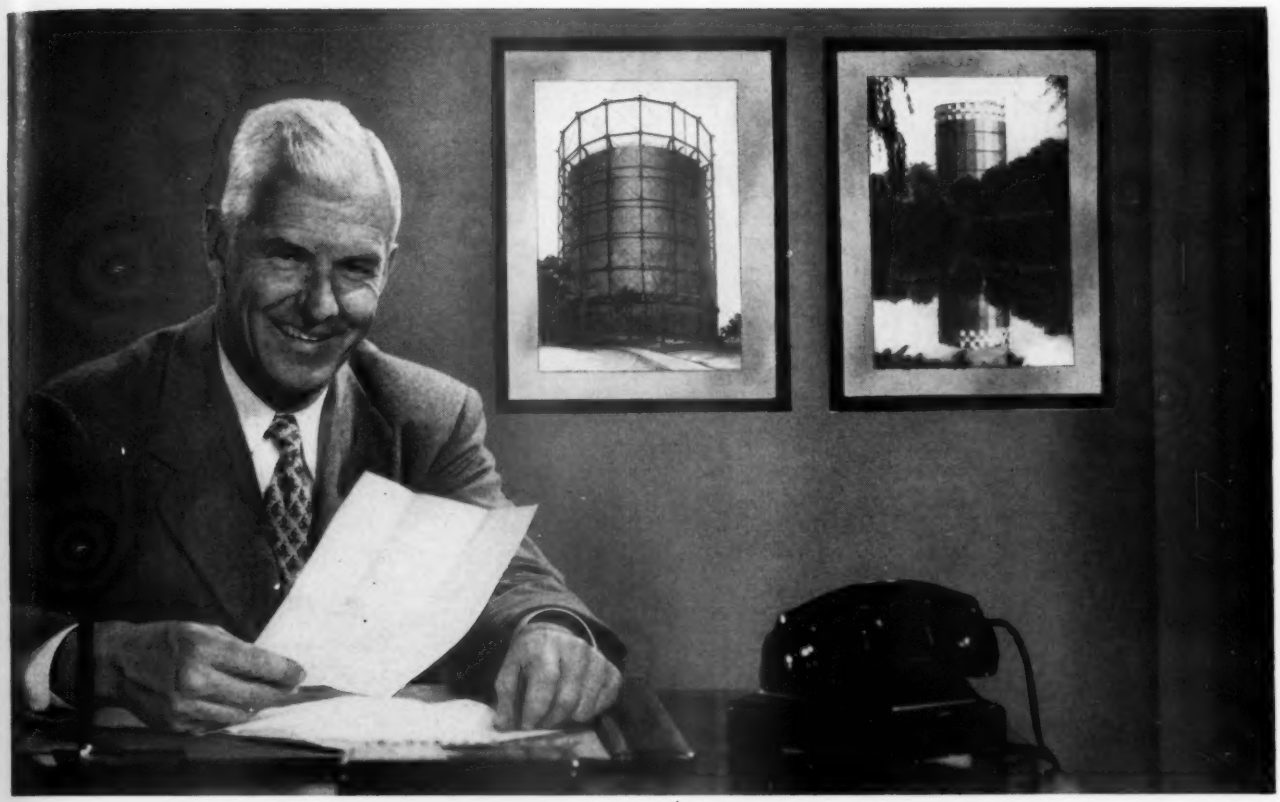

Why it pays these days to give gas holders the best maintenance care.

CONSIDERING that new installations for waterless or water seal holders are more costly and difficult to locate, regular maintenance service on existing equipment today is a vital consideration in your operating program. And it's of immediate value when you realize that systematic inspection *often* results in more favorable insurance rates.

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It's a small price to pay for dependable, year-round service, efficient operation and long gas holder life. Why not investigate this service today? Mail this coupon for full details.

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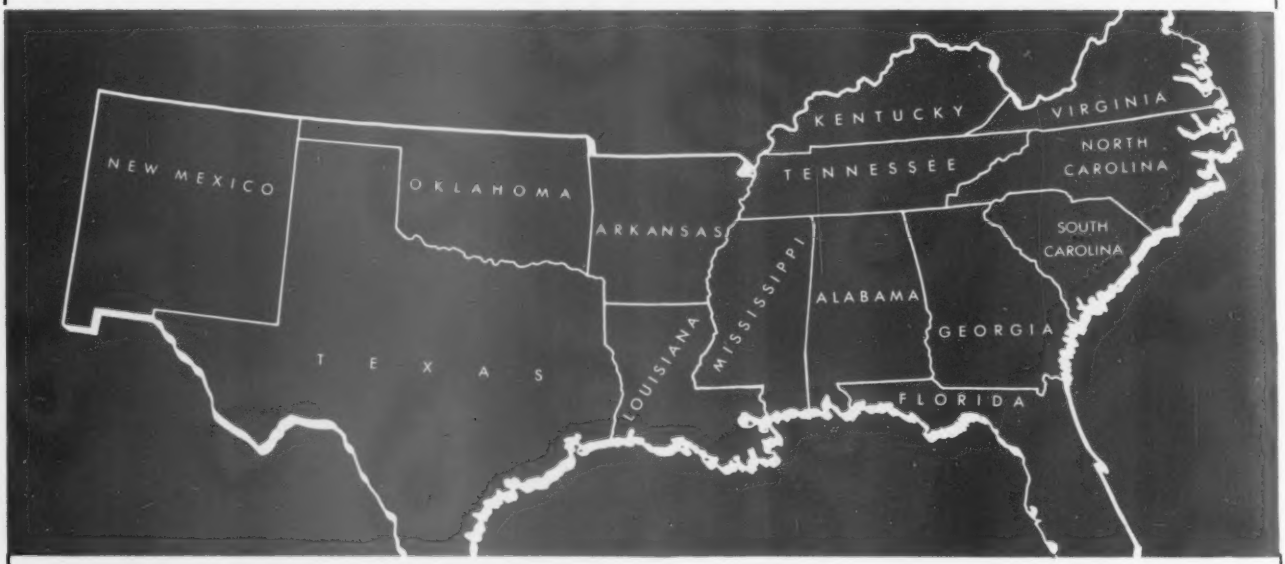
will have a

SOUTHERN GAS ASSOCIATION ISSUE

for initial distribution at the SGA Convention



SOUTHERN GAS ASSOCIATION'S 1953 Convention was Saluted by American Gas Journal with a special Convention issue—the first time that aggressive association was so honored by any gas industry publication.

The stimulating and highly complimentary reception accorded the 1953 issue is the firm base on which the 1954 Southern Gas Association Issue is being built. Once again, SGA officers, managing director and staff have cooperated actively in formulating the contents.

The Southern Gas Association Issue for 1954 —the May issue—will be distributed initially at the SGA Convention, in Houston, April 26-28.

AMERICAN GAS JOURNAL . . . the oldest gas industry publication . . . the fastest growing gas industry publication . . . will have a total distribution of 5,600 copies of the Southern Gas Association Issue.

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DEADLINE FOR SOUTHERN GAS ASSOCIATION ISSUE: APRIL 9.

Editorial:

Another Look at Mrs. America

THE gas industry's Mrs. America Contest for 1954 (remember?) is sliding, slowly and quietly, toward the finish line at something-or-other village on what's-that-beach, Florida.

From all that we have been able to gather, it is not going to require much in the way of brake horsepower to get that deal to sit still on the sand under a cocoanut palm.

Anyway, it was a good idea! But, more important, *it still is a good idea!* Good, that is, if a Mrs. A. Contest for 1955 can get at least some of the basic considerations that should have been accorded the soon-to-be-lamented 1954 Contest.

That it was, and is, a good idea has been shown clearly in some regional high-spots. However good it was in those spots, cross-country participation by utilities represented only 25% of the total meters. That's something less than an industry-wide event.

The 1954 Contest was off to a bad start. American Gas Association announced it as an exclusive gas industry promotion in November, with a December 1 deadline for gas companies and appliance manufacturers to indicate their participation. The contest activities were to start in January and required considerable local planning, for real effectiveness.

Doubtless that too-tight timing worked against acceptance of the plan by some utilities. We do not pretend to know why AGA did not announce it earlier; they had the contest in August.

Despite that timing, some companies took hold of the idea as one which had wide public attraction and went to work on it. Far from being regretful that they poured extraordinary effort into planning and operation, they regard it now as one of the most effective promotions in which they have engaged. They want more of the same.

In some states, practically all companies were in it; New York, representing the dismal picture, had only two companies from opposite corners of the state.

Full value was not obtained by the appliance manufacturer-sponsors. True, every appliance category was covered by a sponsoring company but there certainly was no overall effect created for the buying public that pretty little Erna Snyder was coming at them with a good word about gas from every loudspeaker, magazine page and TV screen. Even with recognition of that same tight-timing, much more could have been done; some manufacturers managed to get it done.

As the understatement of the month: there is nothing more that can be done with the 1954 Contest.

The preliminary decision on the 1955 Contest will be made later this month at a meeting of AGA's general promotional planning committee. Presumably, the committee will balance this year's results with next year's potentials.

The properly-dignified concept of the Mrs. America Contest has a large potential for favorably attracting the very group of the buying public that is all-important to the gas industry.

If the contest is to be operated in the interests of the gas industry in 1955, the field of participation should certainly be broadened to include *all* appropriate segments of the industry. This promotion very properly embraces the appliance manufacturers, their distributors and dealers, the gas utilities *and* the LP gas companies that are heavily-important, in the areas they serve, to the appliance manufacturers.

Association-participation, if broadened to include the regional utility groups, the manufacturers and, again, the LP companies, could not do less than strengthen interest and effectiveness.

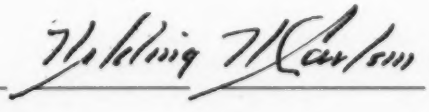
The truly cross-industry approach to this gas industry-exclusive would conform to the principles in the recent resolution by the AGA board of directors soliciting "active cooperation" by all segments of the gas industry "in combined efforts to reach common objectives. . . ."

The promotional committee, if it decides in favor of the 1955 Contest, would be well-advised to formulate a timetable that permits entirely adequate planning and preparation by every company and group that is to participate. And, then, the committee should make it unalterably clear that the timetable is to be followed.

In view of the widely-voiced objections to the supermarkets as the focal points for contest blanks, that feature should be dropped. Indeed, does the gas industry really need to go so far afield for a gimmick?

From the successes amassed by some companies this year, the public relations-publicity-press agentry possibilities, with the spirited application of experienced techniques, are nothing short of huge.

Mrs. America *can* be made the most important single factor in publicizing and promoting gas and gas appliances during 1955. Early planning . . . vigorous planning and preparation . . . an industry unified for action . . . then, vigorous and unified operation . . . those are the basic elements for highly-effective results.



New England Gas Association Conference Hears About Urgent Need for Action

THE New England gas industry met in Boston, late last month, with a clearly-evident determination to face the future with a new fighting spirit that is based in the strong potentials of the industry itself.

The presidents of American Gas Association and Gas Appliance Manufacturers Association pointed to the larger National view of the industry and related it to the regional considerations, in full agreement that the entire gas industry needed the strength of unified action to slow and, eventually, turn the tide of competition.

"Let us not rest on our oars because of the gratifying fact that our New England gas industry has posted new highs in number of customers, in output and in revenues each year for the last 13 or 14 years," J. L. Johnson, retiring president of The New England Gas Association, cautioned the industry.

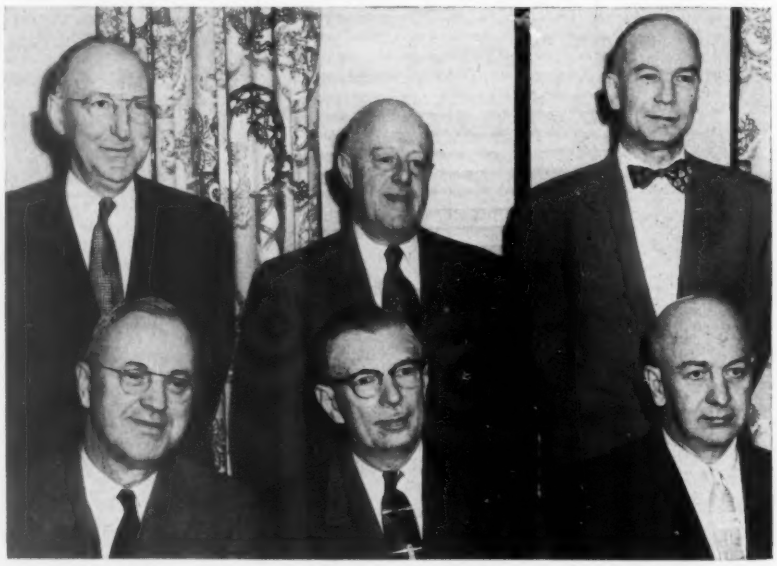
"Let us reequip ourselves," urged Mr. Johnson, who also is vice president, Providence Gas Co., "so that we may insure the continuation of this growth trend for many years to come."

After high-spotting the objectives and progress of the projects under AGA's PAR program and the joint AGA-GAMA recommendations for Gas Industry Development, Earl H. Eacker, AGA president and president, Boston Consolidated Gas Co., stressed his conviction that gas industry efforts of that type constitute "the best guarantee of a healthy, united gas industry."

The recent demonstrations of new domestic range equipment at the AGA Laboratories in Cleveland American Gas Journal, February and March, 1954 gave Mr. Eacker "the greatest thrill I have had in a long time.

"I enthusiastically believe that these developments give the gas industry the

NEW ENGLAND GAS ASSOCIATION OFFICERS—1954-1955



Front—R. E. Wright, president; J. L. Johnson, retiring president; H. E. Ayer, 1st vice president. Back—F. H. Faulstich, 2d vice president; Otto Price, treasurer; Clark Belden, clerk.

OFFICERS AND DIRECTORS—THE NEW ENGLAND GAS ASSOCIATION

PRESIDENT: Roy E. Wright, director of gas sales, NEGEA Service Corp., Cambridge;

1ST VICE PRESIDENT: Harold E. Ayer, assistant general manager, Lynn Gas & Electric Co.;

2D VICE PRESIDENT: Fred H. Faulstich, assistant vice president, Springfield Gas Light Co.;

TREASURER: Otto Price, vice pres., Boston Consolidated Gas Co.;

CLERK: Clark Belden, managing director.

ELECTIVE DIRECTORS

George L. Black, district manager, John Wood Co., Boston; Richard F. Gretsch, executive vice president, The Housatonic Public Service Co., Derby; John A. Hiller, vice president, Portland Gas Light Co.; William T. Jebb, vice president and general manager, The Hartford Gas Co.; Andrew W. Johnston, engineer, Boston Consolidated Gas Co.; Joseph T. Kelley, vice president and general manager, Pittsfield Coal Gas Co.; Claude F. Machen, engineer, Boston Consolidated Gas Co.; Ronald A. Malony, president, The Bridgeport Gas Lt. Co.; Charles W. Merriam, Jr., division manager, Caloric Stove Corp.; H. Coleman Moore, Jr., vice president and treasurer, NEGEA Service Corp.; W. King Murray, assistant to president, New England Electric System, gas division, Malden; Harry J. Patterson, president, Lowell Gas Co.; Robert H. Patterson, assistant to president, New England Electric System, gas division; Charles R. Prichard, vice president and treasurer, Gas Service, Inc., Nashua; Edgar G. Rhodes, president and general manager, The New Britain Gas Light Co.; Edward G. Twohey, president, New England Electric System, gas division; John C. Willis, executive sales manager, Fitchburg Gas & Electric Light Co., Boston.

EX-OFFICIO DIRECTORS

IMMEDIATE PAST PRESIDENTS—Jesse L. Johnson, vice president, Providence Gas Co.; Sherman R. Knapp, president, The Connecticut Light & Power Co.

DIVISION CHAIRMEN: *Accounting*—George E. Curtis, superintendent, customer accounting, Boston Consolidated Gas Company;

Commercial-Heating-Industrial—Herman Koester, Jr., vice president and treasurer, W. Wirt Young & Associates, Inc., Wellesley;

Manufacturer and Distributor—DeWitt P. Sixbey, district manager, Detroit-Michigan Stove Co., Boston;

Operating—Charles V. McCaffrey, superintendent gas manufacturing, Blackstone Valley Gas & Electric Co., Pawtucket;

Residential Sales—John C. Huston, sales manager, The Bridgeport Gas Light Co.

Company-membership in NEGA has had 8 successive years of upswing—an increase of about 96% in the 8 years—for a current total of 369 companies. . . . Mergers continue to reduce the number of New England companies. 58 gas utility-members of NEGA now represent more than 99% of New England's meters.

greatest opportunities it has had in years," he said. "In view of the many favorable comments expressed in Cleveland, AGA will adopt this same cooperative approach to other fields.

"The industrial gas field is also receiving increased attention under the PAR Program," Mr. Eacker commented. "Industrial gas men have recommended that a plank be added to the Gas Industry Development Program encouraging gas companies, within the limitations of their systems and at rates commensurate with the cost of the service, to provide industrial gas on a *firm* rather than an interruptible basis.

Earl H. Eacker

"In addition, a new industrial and commercial gas educational committee has been formed to promote knowledge of the use of gas and gas equipment in colleges, universities and technical schools."

In line with Mr. Eacker's deep interest in safe practices by the gas industry, he pointed out that "during the years of most rapid expansion, a few spectacular transmission line blowouts and distribution system failures have attracted wide-spread public attention. A mere handful of incidents of this type, when they receive national publicity, can undo years of safe operations.

"As a direct result of these occurrences, several states have established regulations covering the design, construction and operation of gas pipelines. Moreover, legislation has been introduced in Congress which would give the Federal Power Commission the authority to regulate construction of interstate pipelines.

"If this situation were to continue, the gas industry would face the danger of a vast complex of different and perhaps conflicting regulations pertaining to pipeline practices.

"Consequently, AGA has asked American Society of Mechanical Engineers to review the present piping code with the objective of developing a code that would satisfactorily meet present-day requirements.

"Work on this new transmission and distribution piping code is positive proof that the gas industry is regulating its own safety," Mr. Eacker emphasized.

The details of the demonstrations of new domestic range equipment, presented to utility and manufacturer executives in late-January, were reviewed for the New England gas industry by Otto E. Zwanzig, director of AGA's PAR program, in an address that was supplemented by a series of color-slides. Construction, operation and performance data were included to give full understanding of the developments that are now available to the industry for incorporation in production-line appliances.

Otto E. Zwanzig

The operating factors affecting appliance performance were discussed from the experiences of 5 gas utilities. Four of the companies represented on the panel were outside the New England area. This geographical diversification is in line with the policy of NEGA to present to its members the values that have been found by more-distant companies. The panel, with the moderator and presiding officer are shown on these pages.

Another panel concerned itself with sales problems and discussed all aspects of sales manpower, dealers, rates and new business expenditures. Two members of this panel were from outside the New England area. The entire panel, in action, is also shown on these pages.

OPERATING PANEL AT NEGA CONFERENCE

Samuel W. Horsfield, gas operating manager, Long Island Light Co.—George B. Johnson, assistant vice president, Minneapolis Gas Co.—George M. Nash, utilization engineer, Central Hudson Gas & Elec. Corp., Poughkeepsie, N. Y.—E. G. Rhodes (moderator), president, The New Britain Gas Light Co.—Dean B. Seifried, gas operating manager, Rockland Light & Power Co., Spring Valley, N. Y.—A. Malcolm Mager, superintendent of gas and electric service, New Bedford Gas & Edison Light Co.—Harold E. Ayer (presiding), assistant general manager, Lynn Gas & Electric Co.

SALES PANEL AT NEGA CONFERENCE

Roy E. Wright, director of gas sales, NEGEA Service Corp., Cambridge—Frank H. Trembly, Jr., director of sales, Philadelphia Gas Works Div.—Hall M. Henry (moderator), vice president and director of gas operations, NEGEA Service Corp.—Henry A. Diekmann, manager, new business department, The Brooklyn Union Gas Co.—Frank J. McLaughlin, general sales manager, Haverhill Gas Light Co.—James D. Dingwell, Jr., consultant, Lowell Gas Co.—Fred H. Faulstich (presiding), assistant vice president, Springfield Gas Light Co.

Sheldon Coleman, president, Gas Appliance Manufacturers Association, and president, The Coleman Company, Inc., addressed the NEGA Conference on the urgency of full coordination between utilities and appliance manufacturers. A summary of his address is presented on page 46.

Considerations of Relief Valves On Customer Meter Sets in California

by George M. Fox
Assistant Gas Engineer
Coast Counties Gas and Electric Company

THE problem of protection against overpressuring at customer meter sets has become increasingly important to the gas industry during the past several years. Recent accidents that might tend to affect public acceptance of gas have resulted in an all-out effort by the industry to study its own weaknesses. Every reasonable effort is now being made by the utilities to protect the customer from the dangers of overpressuring caused by the failure of pressure control equipment.

Three methods of limiting gas pressure to a safe level are currently being used by utility companies. Some companies advocate the use of a valve that automatically shuts off the supply of gas in the event of a failure of the controlling regulator. Also advocated is the monitoring regulator, used in series with the controlling regulator. Upon failure of normal control the monitor automatically functions at a slightly higher, but still safe, pressure level. Perhaps the most widely used safety device is the relief valve.

In actual practice all three methods may be used and often are used by a utility company. It is not unusual to find a meter set using two of these methods in series to protect against overpressuring.

It is the purpose here to present the practices of the California utilities with respect to their use of relief valves on both domestic and industrial meter sets. There will be no attempt to present the relief valve as the best solution to the problem of overpressuring, but only as a solution common to all the utilities and deserving of study.

A relief valve, for these purposes, is any device on a system of gas piping that will automatically discharge gas to atmosphere when the internal pressure of the piping reaches a predetermined level. Basically, there are six types of relief valves: the liquid seal, the weight, weight and lever, spring, back-pressure regulator and expansible tube. Only the three last-mentioned types are widely used by the California utilities; the discussion will be confined to those types.

The problems inherent in the installation and operation of the mercury seal relief valve has precluded its widespread application in customers' meter sets in California.

Spring type

The spring type relief valve in Figure 1 is generally a right angle type valve—the inlet and outlet nozzles are at right angles to each other. When conditions causing overpressuring occur, the increasing pressure will act against the bottom of a seat, which is rubber or composition for low pressures, metal for high pressures. Acting against this pressure is a spring that holds the seat in a closed position. When the pressure builds beyond that pressure for which the spring is set, the relief valve opens. The valve will continue to open until the pressure is equalized on either side of the seat.

One disadvantage inherent in the design of this general type is the wide pressure range between "cracking" pressure and full discharge pressure. "Cracking" pressure is the pressure at which the valve will first begin discharging gas. It is not abnormal for the full discharge pressure to exceed 150% of the "cracking" pressure. This would prove to be a definite limitation where the normal operating pressure and the safe working pressure of the equipment being protected are very close. For this reason it might prove necessary to greatly oversize the valve in order to obtain the desired flow rate, yet limit the build up in pressure.

Another disadvantage of the spring type valve is the metal seat used in those valves designed for use at intermediate and high gas pressures. When the valve discharges gas, foreign matter may cut or groove the metal seat and thus render it unable to seal satisfactorily when the pressure returns to normal.

The main advantage of this type of relief is, in general its lower cost. This is especially true in the pressure ranges where a cast iron body is applicable.

Back-pressure regulator

In a back-pressure regulator, the pressure of the piping system acts directly on the control diaphragm. As the pressure increases, the force on the diaphragm overcomes the preset spring force above the diaphragm and, through a system of levers, causes the valve to open and the pressure to be relieved to atmosphere so that a predetermined maximum pressure may be maintained in the piping. See Figure 2.

This type generally has a small range between "cracking" pressure and full capacity pressure, so that a given size of regulator can be used to its fullest capacity advantage as opposed to the spring type of relief valve.

This regulator is available in all pressure and capacity ranges, but for the high capacities often required, the equipment tends to be somewhat cumbersome and costly. Therefore its most general application has been in metering installations that require a relatively small amount of relief capacity. In such locations it has been found to be most satisfactory.

An additional advantage of the back-pressure relief valve is the rubber or composition seat that affords positive shut-off.

Expansible tube

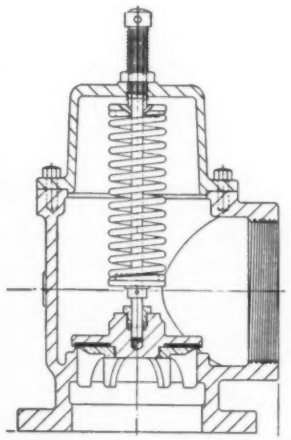
A more recent addition to the relief valve family is the expansible tube type. Pressure from the inlet side of this valve is introduced into the jacket space outside the expansible tube through a small orifice. A small spring-loaded relief pilot is connected in such a manner that an increase in the inlet pressure to the jacket will cause the opening of the pilot valve and so permit flow from the jacket at a faster rate than it can enter through the restricting orifice. As the jacket is emptied, the tube rolls from its seat on the core and allows sufficient flow through the valve to relieve the excess line pressure. When the excess has been relieved the pilot valve again seats, the jacket refills and the valve closes. See Figure 3. Another model of this relief valve makes use of a gas-filled cylinder for control instead of the loading pilot.

In the low pressure ranges, this type relief valve has the disadvantage of the pressure range between "cracking" pressure and full discharge pressure. This range is brought about by the elastic tension of the rubber tube which must be overcome before full relief is possible. For this reason, the expansible tube relief valve is not used to relieve at low pressures. This valve is very satisfactory for installations requiring the discharge of large volumes of gas at intermediate and high pressures.

Another advantage of the expansible tube relief valve is the positive shut-off afforded by the rubber tube seating around a metal core. The tube is made of a special rubber compound that has high strength, tear- and abrasion-resistance. It is resistant to hydrocarbons and will not swell appreciably in normal service.

In a comparison of the advantages

Figure 1
TYPICAL SPRING TYPE RELIEF VALVE



Capacity Curve—¾" valve, 7/16" orifice

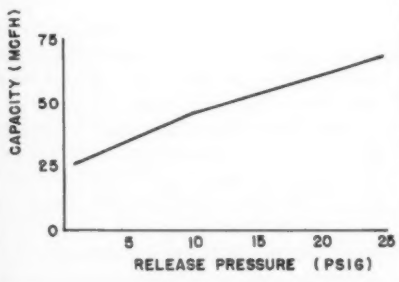
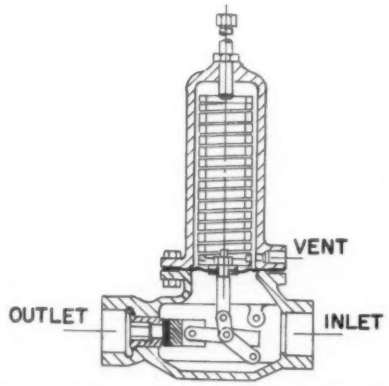


Figure 2
TYPICAL BACK-PRESSURE RELIEF VALVE



Capacity Curve—¾" valve, 5/16" orifice

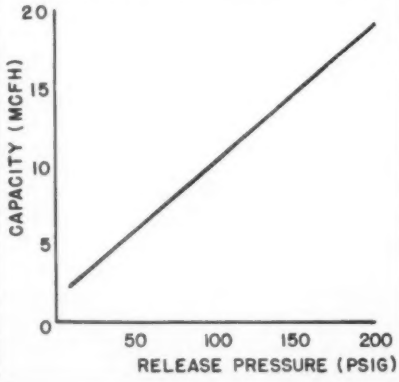
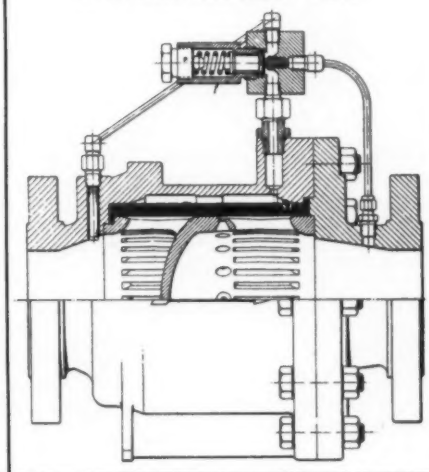
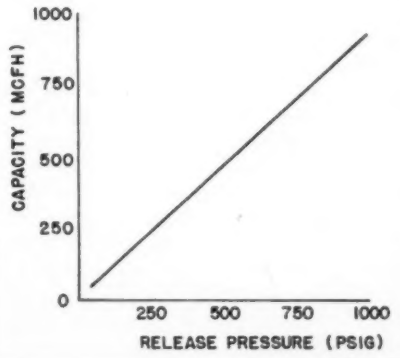


Figure 3
EXPANSIBLE TUBE RELIEF VALVE



Capacity Curve—2" valve



and disadvantages of the relief valve with other protection methods, the accompanying rating table shows the general experience of Coast Counties Gas and Electric Company.

RATING TABLE

Legend: #1—Most Desirable
#2—Desirable
#3—Least Desirable

ITEM	RELIEF	SHUT-OFF	MONITOR
Equipment cost	#1	#2	#3
Maintenance cost	#2	#1	#3
Installation cost	#1	#2	#3
Noise factor	#3	None	None
Failure evidence	#1	#2	#3
Service continuity	#1	#3	#1
Gas Discharge to atmosphere	#3	None	None

The main advantage of the relief valve over the automatic shut-off valve is the factor of "continuity of service." In event of failure of the controlling regulator, the automatic shut-off valve will immediately discontinue service to the customer, but the relief valve will not interfere with the customer's supply.

The monitoring regulator will, in general, have greater initial, maintenance and installation costs than the relief valve. However, the monitor has the advantage of maintaining gas supply to the customer without venting gas to the atmosphere. This disadvantage of the relief valve—venting to atmosphere—is its greatest drawback when compared to both the monitoring regulator and the automatic shut-off valve. Not only is there a loss of gas when the relief valve vents, but the noise itself may cause unnecessary customer-alarm. If the proper precautions have been neglected, this vented gas could also constitute a hazard.

All the factors listed in the rating table should be taken into consideration by the designer who is to decide upon a safety device for a particular installation.

Proposed ASA standards

Section 8 of ASA B31.1 (Gas Transmission and Distribution Piping Systems) is currently being revised by a committee that is partly comprised of members of the gas industry. In this effort by the gas industry to improve upon past standards, the problem of pressure relieving has been considered in detail.

(Continued on page 43)

COMPARISON OF STANDARDS—FIVE CALIFORNIA GAS UTILITY COMPANIES

	1	2	3	4	5
1. Relief valves used on customer meter sets	Yes	Yes	Yes	Yes	Yes
2. Pressure limit of installation of relief valves, lbs.	60	60	75	60	100
3. Extensive use of other types of pressure limiting devices	No	Yes	No	No	No
4. Prohibit use of shut-off valves immediately upstream of relief valves	—	No	No	No	No
5. Shut-off valves locked open when used	—	Yes	No	Yes	Yes
6. Vent stacks	Yes	Yes	Yes	Yes	Yes

Oil Gas Is Produced by Newly-Designed Plant in Argentina

by M. Fernandez Romero

Manager of Gas Production
Gas del Estado, ENDE
Buenos Aires, Argentina

Translated by
Hilario Virgen

A NEW high-Btu oil gas plant has been put in operation with great success by Gas del Estado, Empresas Nacionales de Energia (ENDE). This is another in a series of experimental developments in Argentina's gas industry during the last few years.

M. Fernandez Romero

Buenos Aires and its surrounding suburbs has the highest consumption of fuel gas. Manufactured gas was supplied by a private company until 1945. At that time, gas was manufactured mainly by the distillation of imported coal and by 3 water gas plants. To this manufactured gas some refinery gas was added to increase the Btu value. Daily consumption in 1945 was 1,242 Mscfd of 550 Btu gas.

The Government took over the gas installations in March 1945, and started an intensive campaign to stress the advantage of gas as a fuel for domestic use. There was an immediate increase in gas consumption, shown in this table:

Year	Consumption (MMscf/Year)
1944	3,510
1945	3,880
1946	4,520
1947	5,550
1948	6,180
1949	6,880
1950	7,810
1951	9,280
1952	10,150
1953	11,200

Maximum daily consumption was reached in 1953 with 43,800 Msc.

Gas manufacture underwent a fundamental change when the consumption rose. Several factors were taken into consideration to solve the problems. In the first place, during the last few years there has been the handicap of restrictions on the importation of all raw materials and equipment. Therefore only limited amounts of coal were available, which made it necessary to gradually substitute a crude oil residue coke. This new coke, by its reactivity and low ash content, resulted in an excellent raw material for the existing water gas generator plants.

M. FERNANDEZ ROMERO, a doctor of chemistry, is the manager of gas production in Gas del Estado, Empresas Nacionales de Energia. This organization is in charge of gas service in Argentina. The main plant of this country is the one which supplies gas to the city of Buenos Aires. Many innovations have been introduced in the utility. This article refers to one of them: high-BTU oil gas. In future articles, the author expects to discuss catalytic reforming of natural gas and liquid purification by extraction of sulphurated hydrogen. Together with this article, these form the principal aspects in which gas manufacture in Argentina has progressed.

A new refinery residue gas pipeline was laid to Buenos Aires, providing another facility to meet the higher gas consumption. Also, new generator plants for carbureted water gas were built. It was necessary, for the first time in Argentina, to overcome the technical problems of building this type of plant.

A 10″ natural gas pipeline was finished in 1949, to bring natural gas 1,000 miles from Comodoro Rivadavia to Buenos Aires. At present, 17,650 Mscfd of natural gas is transported through this line with only one field station and one booster station. Practically all this gas is for domestic use in the city of Buenos Aires.

Gas distributed in Buenos Aires is made up of the following mixture:

1. Distilled gas from coal and crude oil coke, in vertical retort with steam and natural gas injection for reforming;
2. Carbureted water gas;
3. Manufactured (blue) gas;
4. Thermal-reformed refinery gas;
5. Thermal-reformed natural gas;
6. Catalytic-reformed natural gas;
7. Straight natural gas, added directly;
8. Straight refinery gas, added directly.

For efficiency of the main distribution lines, the Btu content of the gas has been increased to 562 Btu, with an automatic control at the gas plant.

The availability of natural gas has been a very important factor affecting the manufactured gas. As a matter of fact, with new booster compressor stations to be installed soon on the 1,000 mile pipeline, will approximately double the line's capacity. Furthermore, with a newly discovered field in the northern part of the country, the gas reserves have been increased enormously. A new line from this field will bring enough natural gas to Buenos Aires to amply cover all its requirements.

Therefore, the future of the Argentine gas industry has been determined. It will be transformed to natural gas, but in the meantime manufactured gas of

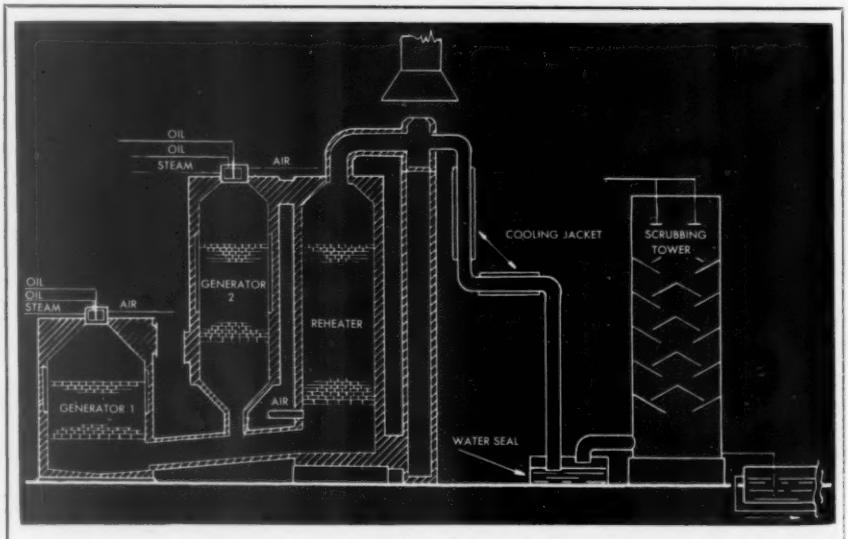


Figure 1

similar specifications to that which is now being produced will have to be supplied to avoid conversion of the appliances.

It is important to point out that the process for the manufactured gas must be changed radically. The coke and crude oil coal distillation will be discarded because the old retorts are practically worn out and the economics do not justify building new ones for only a few years of use.

When the coal distillation is discarded, coke will no longer be available for the manufacture of water gas. This will make the use of two processes imperative: catalytic reforming and oil gas. The former is for the normal mixture with natural gas and the latter is for peaks of consumption or emergencies where natural gas might not be available. Another reason is that it has now become difficult to hire laborers for coal- and coke-handling. The processes selected do not have this inconvenience.

When the above assumptions were established, tests on catalytic reforming and high-Btu oil gas production were undertaken to solve this problem. Both processes are already in operation; this article will cover the high-Btu oil gas production only. The experience with natural gas catalytic reforming will wait for a future report.

Results with twin generators

The aim was to gather some practical information on oil gas because, as stated earlier, this type of gas had never been produced in Argentina. Also, the information contained in technical books was practically nil regarding the very important points of the process.

The pilot plant was one of the existing carbureted water gas plants, converted into one of the so-called twin generators.

Due to the fact that the carburetor was placed at a certain height above floor level, it was necessary to build a vertical duct to join it to the horizontal duct that comes from generators 1 and 2, as shown in Figure 1. Some other minor modifications also were made. Twelve rows of silicon carbide checker bricks were placed in one of the generators and eighteen in the other. At the top of the generators, burners and injectors with jacket water were installed. These burners were developed by the technical department of Gas del Estado and, after several installations, a very satisfactory design was developed.

The wooden grill-packed gas washing tower was changed to have metallic trays on the inside only, as can be seen in Figure 1. With this change, obstruction with tar or carbon black was avoided.

After these changes were accomplished, and after a few trial operations, the plant went into normal production. During the Winter weeks of maximum gas consumption this plant operated practically continuously. This plant was used to obtain some important design data. Among other things we found the following points:

1. How burner-injectors should be designed;
2. Behavior of refractory materials and Argentine-made parts at the high temperatures used in this process;
3. Maximum operating conditions, such as quality and quantity of oil, operation cycle, temperatures, pressures and efficiencies;
4. Quality and volume of gas obtained;
5. Composition of tar, its dehydration and distillation.

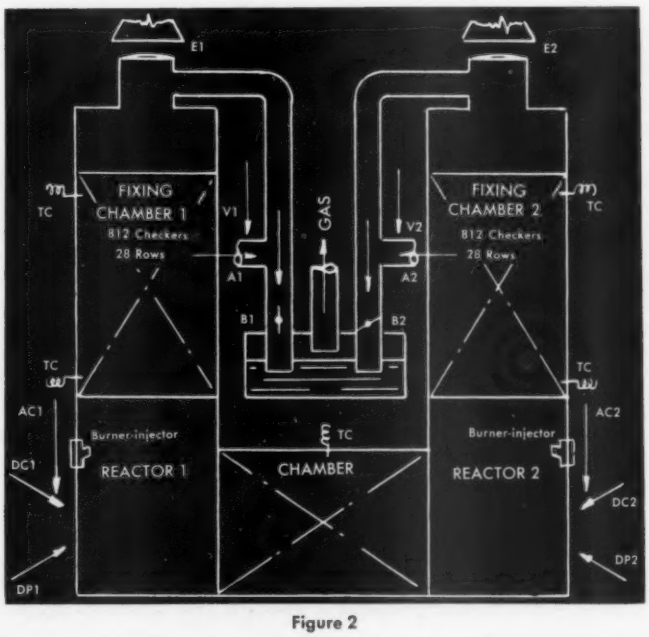


Figure 2

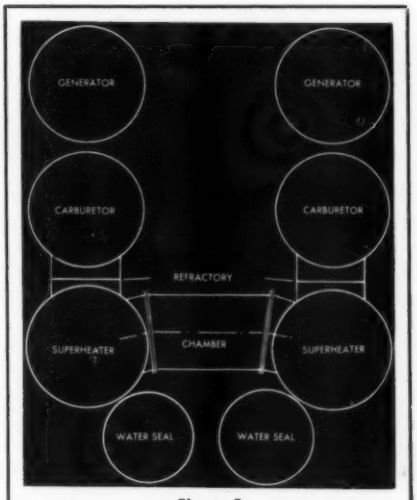


Figure 3

While most of the above information might be currently known in other countries with a higher degree of industrialization, Argentine industrialization is just starting and there are technical difficulties in building and testing equipment never made before in this country. Technical information for the manufacture of some of this equipment is not very well known; the technicians engaged in the manufacture of gas had to develop their own designs.

Design of new plant

After a thorough study of all United States publications on the different types of gas production by oil plants, the following conclusion was reached: The final process should be chosen from two main system, both of them regenerative types, but with one fundamental difference. One is packed with checkers in the reactors; the other has empty reactors.

Undoubtedly, it is a big advantage to have the reactors with checkers if it allows a larger storage of heat, which means better efficiency. However, due to high working temperatures, the checkers eventually broke, obstructing the flow of gas and steam in the reactors as shown in Figure 2. This breakage of checkers usually occurred after 1,200 working hours. To partially avoid this inconvenience, the checkers may be separated in such a way as to avoid falling into the lower channels. This inconvenience does not occur in the design with empty reactors. Unfortunately, in this last type of reactor available heat for oil cracking is lower and therefore gas production is lower than in the checker design.

When this point of study was reached, it was decided that the reactors packed with checkers were desirable. Also, that they should be designed in such a way that the breakage of the checkers could not affect their performance. See Figure 3. There was nothing in the literature re-

(Continued on page 42)

How Seattle Gas Co. Plans Ahead With The City Engineers

by M. C. Nutter
Seattle Gas Company

THE normal uninterrupted service which any utility renders is generally taken for granted. Yet this service is vital to the life and welfare of the community. A modern city is entirely dependent on it.

In view of this dependence, the utility has a definite responsibility to participate in planning that goes into the growth and development of a city. Proper long-range planning can avoid unnecessary costs to the city and to the gas company, or more specifically, to taxpayers and to gas company customers. It is important that a gas company, or any utility, be able to plan ahead with the city engineer so that utility growth can be closely integrated with that of the city.

In planning ahead with the city engineer, it is well to know him personally and to understand some of the problems that go with his job. He is very likely a professional engineer of rather wide experience who has undertaken a difficult and complex job. Responsibility for the engineering and construction of all public improvements belongs to him. The location and design of bridges, tunnels, subways, main traffic arteries and sewage treatment plants are generally subject to considerable controversy. So at times the city engineer must also be a diplomat or salesman. His achievements will remain as monuments to his name; as will his mistakes.

Because of his education and experience, the city engineer will be able to understand and to evaluate the problems of a gas company in relation to public improvement work. Gas company property is involved directly or indirectly in many public improvement jobs. It may be advantageous for the company to lay or to renew mains and services ahead of street paving. Construction of grade separations generally necessitates the relocation or abandonment of gas mains. New bridges are likely to involve gas mains due to conflicts of these mains with piers or footings. Changes in street grades often make it necessary to raise or lower mains to conform to new grades. The widening of existing street paving may require the abandonment or extension of stubs and the relocation of curb cocks and boxes. Mains and services must be protected from damage during construction of sewers and water mains. Services are quite often involved in sidewalk paving jobs.

It is important that the gas company have early knowledge of public improvement jobs so that company work can be coordinated with that of the contractor. Early knowledge gives time for proper planning and will result in a safer, more efficient job and better relations with the contractor and city engineering department personnel. Late knowledge of any public improvement job can prove costly to the gas company, cause delay to a contractor and irritations to everybody concerned. Early notification of these jobs must come from the city engineer's office.

Common interests

The gas distribution engineer has many common interests with the city engineer. Proper development of a distribution system calls for long-range planning, as does the orderly development of a city. Both men are concerned with the proper location of utilities on city streets so that conflicts in locations of these utilities may be avoided. The problem of constructing, operating, and maintaining gas mains and services with a minimum of interference to traffic is of mutual concern. Public safety is of primary importance in all engineering and planning. Civil defense organizations provide an opportune meeting place for the gas engineer and the city engineer. The need for cooperative planning is most apparent in all civil defense exercises.

It is to the public interest that all utilities publicly and privately owned, participate in all phases of city planning. Only in this way can utility rates be kept at a minimum and the taxpayer receive full value for his dollar. Money saved through cooperative planning is a direct benefit to the gas consumer and the taxpayer, who are probably the same person. Inconvenience to the public can be kept at a minimum during construction of public improvements where utilities are involved if proper plans are made. Interruption of service to customers can also be avoided or minimized.

Long-range planning is made easier in Seattle than in many cities because of the organizational structure of the city engineering department. Seattle is unique in having a utility division in its engineering department that is devoted entirely to the control of construction, maintenance and operation of utilities in the city. It issues all necessary permits, inspects all work and maintains complete records of the locations of all privately-owned utility property in Seattle.

One inspector from this office is assigned on a full-time basis to cover all gas company work. The gas company pays a flat fee to cover the cost of this work. The city gas inspector is a direct means of two-way communications between the gas company and the various divisions of the city engineering department. Many problems are easily solved or altogether avoided because of this inspector's thorough knowledge of both gas company and engineering department operations.

Cooperation

Through this utility division Seattle Gas Company is furnished prints of all proposed public improvements and job prints of all contract jobs before they are let. Also, prints covering the applications for vacations of any city street or alley are delivered directly to the company's engineering department so its utility right can be protected in these vacations. On major public improvements the utility is generally notified before prints are available.

Gas mains are shown on major public improvement job prints only, by the city engineering department. In 1953 the company spent approximately 1,000 man-hours in reviewing and marking mains and services on job prints for contractors, and it is now discussing with the city the possibility of having gas mains shown on all public improvement prints in the future. This will call to the attention of the city design engineer any conflicts with Seattle Gas Company's mains, give a contractor more complete information when bidding on jobs and avoid damage to Seattle's mains.

Prints of underground utilities are made available to the utility at a nominal cost through the company's city gas inspector. These prints are detailed, accurate and complete, showing the location and depth of all underground utilities in the downtown area. At times they show more accurate details on mains than the company's records. They are invaluable to the company's street crew in locating leaks and avoiding damage to other utilities, and are very useful in making manhole leakage surveys. Seattle Gas is presently developing files of these prints to include the entire downtown area.

Benefits to gas company

Seattle Gas Company had a recent example of the benefits of planning ahead with the city engineer. By having early

(Continued on page 32)

Wave of Refunding Operations Seen

Mainly Bonds But Heavy Sprinkling of Preferred Stock Too

by John F. Falvey

Financial Editor

John F. Falvey

ALL present indications point to a wave of refunding operations this year. These will be confined chiefly to bonds, but it is quite certain that there will be also a fairly heavy sprinkling of preferred stock refundings. Utility companies which financed property additions and improvements in the fateful March-June 1953 period now find themselves able to offer publicly new bonds and preferred stocks practically a full 100 basis points cheaper than they could in the earlier period, when the corporate security markets were badly upset by the efforts of the Treasury Department at the time to pattern the markets after its own ideas.

Where the redemption prices do not exact too great a penalty, the average refunding costs in the neighborhood of 25 to 30 basis points. With anything above this representing a saving to the utility in question, the decision to refund is virtually inevitable.

Periods of softness are developing in the market for both bonds and preferred stocks, however, due to the eagerness of underwriting firms to obtain their share of the new offerings. The resistance points recently have been the 2.90% mark or thereabouts for high-grade liens and four % for equally situated preferreds. At the time of this writing the Houston Lighting & Power Company bond issue priced in mid-March to yield 2.90% to the public is still in syndicate, and very little of the $40 million Detroit Edison Company bonds offered at about the same time on a 2.91% basis have found their way into investors' hands.

Whereas the successful investment banking bidders experienced little trouble in disposing of 70,000 shares of Louisiana Power & Light Company preferred on a 4.07% basis, they have sold only about one-third of an equivalent number of equally investment rated Dallas Power & Light Company preferreds put on the block on a 3.9% yield basis.

Over-pricing of new issues is to be expected every so often in a period of strong markets such as we have had recently for bonds and preferred stocks as the bankers over-reach for issues. Such periods of unsettlement constitute merely market indigestion and are temporary. The present does not seem to be any exception.

Improvement in the bond market has been constant and strong for a number of months. Just how strong it has been is shown in the drop of 24 basis points during the first three months this year in the yield afforded on top-notch corporate bonds. This represents a gain of eight % in interest savings for the borrowing corporations, compared with the level which prevailed at the close of 1953.

According to the latest findings of the Department of Commerce and of the Securities and Exchange Commission, business spending for new plant and other capital facilities is expected to aggregate about $27 billion this year. Such a level of capital expenditures would fall about mid-way between the 1953 record-breaking total of $28.3 billion and the $27.2 billion recorded in 1952, the second best year to date.

While the utility industry—electric, gas and combination companies—is expected to spend practically as much as in 1953, the necessary financing should be effected on a firmer market base and at fairly heavily reduced capital carrying costs.

With the exception of two of the larger insurance companies—which managed to lend their available resources well ahead at the higher yield rates which prevailed during a good part of 1953—the life insurance companies and other institutional lenders are pretty well loaded with cash, which the prospective borrowers seemingly can borrow at fairly advantageous rates merely by judiciously shopping around.

This factor, coupled with sharply reduced borrowing needs of business as a whole resulting from generation of a constantly increasing volume of funds through rising depreciation reserve accruals and through accelerated amortization schedules for a sizable total of new plant facilities, promises utility company managements greater leeway and more promising borrowing and financing possibilities than heretofore in doing their necessary fund raising via the securities markets.

Paralleling the strength witnessed in the market for bonds and preferred stocks has been the recent improvement

(Continued on page 31)

INDEX OF YIELDS : SELECTED UTILITIES STOCKS

	Mar. 1954	Feb. 1954	Jan. 1954	Dec. 1953	Nov. 1953	Oct. 1953	Sept. 1953	Aug. 1953	July 1953	June 1953	May 1953	Apr. 1953
Natural Gas Transmission Companies	4.17%	4.25%	4.21%	4.39%	4.44%	4.44%	4.90%	4.46%	4.76%	4.72%	4.34%	4.18%
Natural Gas Transmission & Distribution Companies	5.27	5.39	5.39	5.54	5.49	5.58	5.74	5.13	5.41	5.55	5.28	5.06
Manufactured & Mixed Gas Companies	4.68	4.66	4.66	4.91	4.75	4.94	5.14	4.99	5.06	5.08	4.80	4.73
Class "A" Electric Companies	4.68	4.92	4.92	5.10	5.15	5.14	5.41	5.27	5.41	5.53	5.18	5.14
Class "B" Electric Companies	4.93	5.01	5.14	5.23	5.14	5.37	5.61	5.50	5.41	5.68	5.35	5.06

This is a straight arithmetical index of comparative yields obtainable on a selected group of gas and electric utility industry common stocks.

The companies comprising this index have been selected by the AMERICAN GAS JOURNAL as providing a representative cross-section of each industry, from the standpoint of geographical diversification and of the relative importance of the individual companies in their areas.

No effort has been made to weight the average to give effect to changes in capitalization or in dividend rates because the yields afforded on the issues reflect such changes. The index is designed to show the rate of return and not necessarily market movements on the stocks comprising it.

This index is compiled from: natural gas transmission companies, 5; natural gas transmission and distribution companies, 5; manufactured and mixed gas companies, 4; class "A" electric companies, 4; class "B" electric companies, 5.

Gas Company Rights and Liabilities Reviewed in Court Actions

by Leo T. Parker
Attorney at Law
Cincinnati, Ohio

A NUMBER of questions regarding legal rights and liabilities were asked by gas company officials recently in the South and Southwest. In addition, several queries have been asked by readers who are quite uncertain, and often in error, about these rights and liabilities. Because of the general nature and importance of the subject matter, the following should prove to be valuable for all readers.

Validity of mortgages

An official of a gas company which sells gas appliances asked for the proper legal solution when a seller of gas equipment takes a recorded mortgage to secure a purchaser's installment payments, and the purchaser transports the equipment out of the state and sells it. Also, this official, and others, showed considerable interest in phases of mortgage, lien and similar laws. Another official asked this question: "Under what circumstances is an unrecorded chattel mortgage or conditional contract valid? When is a properly recorded chattel mortgage or conditional contract of sale void? Also, how can we be certain we can repossess gas appliances and merchandise which we resell to purchasers who fail to make agreed payments?"

First, it is important to know that a company which sells gas appliances and merchandise can be assured of repossessing the merchandise if: it has a first lien, as a chattel mortgage or conditional contract of sale which is properly recorded; the equipment can be removed without damage to the building in which it is located; and the purchaser violated or breached his contract.

According to a recent court an unrecorded chattel mortgage on gas merchandise, appliances or equipment is valid and effective under these two conditions:

First, if the present owner of the goods had knowledge that the unrecorded mortgage existed. For example, assume that a purchaser mortgaged chattels to a gas company to secure payment of money. Also, assume that the gas company did not record the mortgage, but one C knew that the gas company held the mortgage. Later the purchaser sold the chattels to C who claimed that the gas company's mortgage is void because it was not recorded. Under these circumstances, the court will hold that the unrecorded mortgage is effective and valid as to C, because he knew that the mortgage existed.

Second, an unrecorded mortgage or conditional contract of sale is valid if the lien is noted on the bill of sale or certificate of title, as required by a state law.

Review State laws

In the past the law was well settled that a properly recorded chattel mortgage in any state is good in all counties and states. However, due to a new court decision, gas companies which take chattel mortgages, or conditional contracts of sale should review the new statutes of different states.

In Colonial Company v. Ant, 54 S. E. (2d) 326, the testimony showed that one, Ant, mortgaged the merchandise in Ohio where the sale was made.

A new Georgia law provides that when merchandise is brought into the state, a new mortgage must be recorded in the county, in Georgia, where the merchandise is now located within 6 months after it is brought into the state.

The court held that the holder of a chattel mortgage in Ohio could not recover possession of the equipment purchased by an innocent purchaser in Georgia, because testimony showed the equipment had been in Georgia for over 6 months and no mortgage was recorded in this state. The court said:

"It is true, in some cases, the mortgagee may have difficulty in following the property within the time allowed by law, but it is easier for him to do this, after voluntarily parting with his possession, than for a buyer of personal property to be required to locate liens and claims the only record of which exists in some unknown state."

Also, see Patterson v. Universal C.I.T. Credit Corporation, 37 So. (2d) 306. Here it was shown that a dealer in Alabama sold to one, Dixon, certain equipment for the purchase price of $1,086.15, of which the sum of $294.00 was paid in cash. The dealer recorded the conditional contract in Alabama but did not record the contract in Mississippi where Dixon lived and took the equipment. A law in Mississippi provides that mortgages and other liens on personal property, merchandise, etc., executed out of the state shall be binding in Mississippi only if a duly certified copy of the lien be delivered to the proper clerk of a court in Mississippi for record. The dealer failed to record the lien in Mississippi. Dixon sold the equipment to one Patterson in Mississippi who had no knowledge of the lien.

In subsequent litigation the higher court held that the company which financed the transaction could not recover possession of the equipment from Patterson.

Assisting in fraud

According to a recent court, if a dealer or seller intentionally or unintentionally "assists" a purchaser to perpetrate fraud on an innocent party, such dealer or seller automatically forfeits his first lien.

For example, if a seller gives both possession of equipment and a clear bill of sale to the purchaser, the seller cannot repossess the merchandise from an innocent purchaser irrespective of the fraud practiced by the original purchaser. The court decision Equitable v. Murray Company, 54 S. E. (2d) 650, clearly illustrates this law irrespective of complication which, at first hand, may appear to give the original seller unusual legal rights.

The facts in this case are: A seller, the Murray Company, executed and delivered to one Johnson a bill of sale to equipment for the consideration of $2,000.00. This amount was not paid by Johnson in cash but he gave his personal check to the seller. The seller failed to make any notation on the bill of sale, or otherwise, to the effect that legal title did not pass to Johnson until the check was paid by the bank on which it was drawn. Hence, the bill of sale and delivery of the equipment apparently conveyed a good title to Johnson. Later, Johnson sold and delivered the equipment to one Willis, for $1,050.00 and executed a bill of sale to Willis. Immediately afterward Willis resold the equipment to Johnson for $1,344.00, payable $126.00 per month for 10 months. Hence, Johnson acquired cash and also possession of the equipment.

Soon afterward the Murray Company repossessed the equipment from Johnson because his check for $2,000.00 he had given as payment was returned, unpaid. At this time the Murray Company had no idea that Johnson had sold the equipment to Willis and later repurchased it. Therefore, the officials of the Murray Company were surprised when Willis filed suit to recover $1,344.00 the balance which Johnson owed Willis for the equipment. The lower court refused to hold the Murray Company liable to Willis, but the higher court reversed the verdict and said:

"By delivering their bill of sale the defendants (Murray Company) put it in

(Continued on page 35)

7,655 Showings of Columbia's Dan & Gus Tell Public of Utility Operating Problems

ANYONE employed by a utility has probably heard this question many times—"What's the difference between a private industry and a public utility?"

In order to provide a suitable answer, Columbia Gas System, one of the largest integrated natural gas utilities in the United States, decided to meet and conquer the problem with the aid of modern, movie-making techniques. And the result attained, within a year and a half, is that Columbia has explained the basic differences between a private industry and a public utility to about 520,000 people through the use of a prize-winning animated color cartoon entitled "The Legend of Dan and Gus."

The film was designed to point out the differences between a government-regulated industry and those in a freely competitive industry, to a broad segment of the public, from high school students to graduate economists. The half-hour film, which combines live shots of gas industry operations with animated cartoons, follows the careers of two brothers and the firms they founded—Dan's Doorknob Company and Gus' Gas Company. In an absorbing, sprightly style it covers the problems of economic cycles, material shortages, competition, financing and other practical challenges faced by the two companies.

Distribution of the film

Most of the showings of "Dan and Gus" have been within Columbia's seven-state, mid-Appalachian operating territory, although Modern Talking Picture Service, distributor of the film, has given it limited distribution throughout the country. It is also distributed by Columbia's Group offices in Charleston, W. Va., Columbus, O., Pittsburgh, Pa., and New York.

Since the picture, which was made by Wilding Picture Productions, Inc., adequately covers the problems of utilities in general, 22 duplicate films have been purchased, at cost, by 15 other public service companies. Columbia also has donated facsimile prints to several organizations, including the New York Board of Education and New York State Department of Commerce.

When "The Legend of Dan and Gus" is shown in schools, teachers' guides that are prepared by Modern Talking Picture Service for classroom use are supplied in advance. The guides contain questions and answers about points made in the film. At the showing, the students are given "take-home" booklets produced by Columbia, which give a brief history of utilities from the time of the Roman public baths.

For showings to Columbia's 11,000 employees, who have seen the film twice, visual aids were prepared for use by discussion leaders.

Last year, The Legend of Dan and Gus won a first award presented by Public Utilities Advertising Association. Also, it was selected for showing at the Cleveland Film Festival.

The New York Telephone Co. recently borrowed six duplicate prints for use in an employee training program. It also is televised frequently by stations throughout the East.

Compliments received

Comments received at Columbia Gas from companies which have purchased copies of the film lead management to believe that the film is exceedingly effective and successful in educating the public to the differences between utilities and private companies.

L. E. Nelson, vice president of Kansas-Nebraska Natural Gas Co., has written, "It seems that the gas industry has finally developed the idea that they do have an industry that requires more information about it to be given to its employees and to the customers that it serves. We are planning to order one of the films . . . and know that we will be able to use it over our territory a great deal."

L. M. Holmes, manager, Dayton Power and Light Co., says, "We have received one print of the film . . . and believe that it is an excellent production. We would like to use it throughout our territory, as it has a timely message in connection with our operations."

And from W. E. Long, training director of Houston Natural Gas Corp., comes this accolade, "We were greatly impressed and have decided to purchase a copy of The Legend of Dan and Gus, for use in our employee indoctrination course. We have never before seen a film so completely adaptable to our operation. Usually, we must preface all showings with 'Now, you'll note this film shows so and so, which isn't exactly the way Houston Natural does it, but . . .' No such remarks will be necessary with your film. May I say you have not only done the gas industry a great service by

(Continued on page 31)

Brothers Dan and Gus bid parents good-bye and set out for the business world.

Dan is ready for business. He has capital, production plans and a permit to build.

Gus succeeds in raising capital for his gas company because of its stable nature.

Gus debates taking a Commission franchise because of government imposed restrictions.

At long last, Gus enters the utility industry with Gus' Gas Company.

Old Days Recalled... from AMERICAN Gas Journal

ESTABLISHED 1859

90 YEARS AGO

April 1864

HONESDALE, PA. *A telegram in the daily papers of March 12th says that the "gas house," at Honesdale, Pa., was blown up, and is a total loss. We have no further particulars of this calamity, except that two persons were seriously injured.*

APRIL 1864

GAS IN ARIZONA. *The sudden rise of new towns in the mining regions of Arizona will soon necessitate the construction of gas-works. In California, gas-works were built, in increasing numbers, soon after the mining business became a settled thing, and also in Nevada. As a large influx of emigration is now settling in Arizona, new towns and villages must spring up with great rapidity, and the people will have the best artificial light. The same remark will also apply to Colorado, which is rapidly being settled.*

APRIL 1864

THE GAS TAX. *It is quite probable that Congress will increase the tax on gas, in which event several of our prominent companies will add the whole of it to the bills of their consumers.*

50 YEARS AGO

April 1904

THE PROPOSITION TO CONSTRUCT a Gas Plant at Barre, Vt., has been revived. The Peoples Heating, Lighting and Power Company, the headquarters of which are in Boston, is the sponsor this time.

APRIL 1904

A CORRESPONDENT IN BALTIMORE, MD., has written: "Over 200 prominent business men, representing 25 or more counties interested in the natural gas resources of West Virginia, met in convention in Clarksburg this week to consider measures for the protection of natural gas. . . . Dr. I. C. White, State Geologist of West Virginia, in an address, urged the necessity for preserving this great material wealth and declared waste and outside distribution to be absolutely criminal. . . . Former Assistant Attorney-General W. W. Thornton, of Indiana, spoke of the existing condition of industries in Indiana, brought about by the reckless waste and exhaustion of the natural gas supply of that state. It is proposed to urge legislative action in the matter."

APRIL 1904

THE BOARD OF PUBLIC SERVICE, Cleveland, O., will receive bids for supplying the city of Cleveland with 2,000 burners for incandescent gas street lamps.

APRIL 1904

THE LACLEDE GAS COMPANY, of St. Louis, Mo., will add 100 miles of pipe to its main charter system this year.

APRIL 1904

MR. W. E. STEINWEDELL, Secretary of the Gas Machinery Company, Cleveland, O., informs us that the Louisville (Ky.) Gas Company has arranged with the first-named for the placing on the works of the latter the following apparatus: Special coal gas condensers and a P. & A. tar extractor, up to taking care of a daily make of 2,500,000 cubic feet . . . and one 9-foot double superheater, water gas apparatus, with water gas washer, complete.

25 YEARS AGO

April 1929

A NEW GAS LINE *from Petrolia to Fort Worth, Tex., continuing on to Dallas, for a total distance of 135 miles, is planned by the Lone Star Gas Company, according to an announcement made recently by L. B. Denning, president. The line will be of 20-inch pipe with a daily capacity of more than 100,000,000 cubic feet, and will cost several million dollars. It will be the largest gas line in the northern part of the state, and will give the Lone Star Gas Company four main lines reaching from Fort Worth and Dallas from the Northwest and North.*

APRIL 1929

THE U.G.I. CONTRACTING COMPANY, *division of United Engineers & Constructors, Inc., has been commissioned by Philadelphia Suburban-Counties Gas and Electric Company to furnish and install a 6" diameter high pressure, welded steel gas main from Langhorne, Pa., to Bristol, Pa.*

APRIL 1929

THE CLEVELAND TRENCHER *Company, Cleveland, O., announces the appointment of A. V. Jones as its general manager. Mr. Jones was until recently merchandise sales manager for the Buffalo General Electric Company, with whom he has been associated for the past twenty years.*

APRIL 1929

THE GAS PURIFYING MATERIALS *Company, Inc., has recently purchased the 5 acre water front plot in Astoria (N. Y.), giving them additional working space for the manufacture of their product Iron Boring Oxide. Exactly ten years ago, this company started business with a 50' by 100' plot. Their business has expanded to such an extent that 15 full acres is now occupied by their Providence (R. I.) and Long Island City (N. Y.) yards.*

American Gas Fundamentals OUTLINE

NATURAL GAS
- *Geology
- *Drilling and completion
- *Methods of estimating reserves
- *Chemicals from gas
- *Natural gas conservation
- *Underground storage of natural gas

MANUFACTURED GASES
- *Coke oven gas; producer gas, blue gas; carbureted water gas
- *Reformed gas
- *Hi-Btu oil gas
- Interchangeability

LIQUEFIED PETROLEUM GASES
- *Sources, properties and uses

BASIC GAS LAWS
- *Perfect gases
- Supercompressibility

TRANSMISSION
- *Pipe lines
- *Corrosion and pipe protection
- *Compressor stations
- *Gas conditioning
- Flow formulae
- *Principles of orifice measurement
- Pipe coatings and protection methods

GAS STORAGE
- *Methods of storing gas

GAS DISTRIBUTION
- *System design and operation
- *Pressure regulation, part 1
- *Pressure regulation, part 2
- *Leak detection and control
- *Metering
- Measurement and accounting
- *Odorization
- Customer service

GAS UTILIZATION
- *Principles of gas combustion
- *Competitive fuels, part 1
- *Competitive fuels, part 2
- Domestic
- Commercial
- Industrial
- *Principles of absorption refrigeration

CONVERSION PRACTICES

MANAGEMENT PROBLEMS AND POLICIES
- *Corporate structure
- *Public utility regulation
- *Public relations
- Theories of rate making
- *Functions of the Land Department
- *Communications in the gas industry
- Personnel Management

GLOSSARY
- *Ab-to-Spe

***Indicates chapters published since January 1, 1951; available without charge to new subscribers to American Gas Journal.**

How to Use the Material

American Gas Fundamentals *is a comprehensive compilation of basic gas facts to guide any gas utility employee toward a broader understanding of the industry as a whole.*

The series is designed to be removed from each current issue of AMERICAN GAS JOURNAL *and filed in a ring binder where it may be accumulated into a text book of permanent usefulness. Material should be filed under the major subject head appearing in the upper right hand box at the head of each chapter.*

Pipeline and Network Gas Dispatching

DRAMATIC stories have been told, volumes have been written and pictures have been filmed of the construction of the giant natural gas pipeline system of America. But, before it will react to serve the millions of people for whom it was designed, this giant must be goaded into animation by a technique known as *dispatching.*

The need for dispatching has pyramided with the growth of the industry. In the beginning, small independent companies were organized for the purpose of utilizing this valuable fuel. Transmission lines were extended only from the wells to near-by cities and villages. The first method of control was by the manual regulation of the rock pressure of the wells. These wells were turned off and on as the market demanded. In some cases, standpipes were provided along the lines to relieve any excess pressure. Sentries were placed at strategic points to watch over the operation and they were known as *pressure men,* a term often erroneously applied to dispatchers of today.

As local gas pools became depleted, many communities found themselves wanting for this cheap and efficient fuel. In some cases, it was necessary for them to either augment their supply or return entirely to the use of manufactured gas.

Through the merging of many small companies, it was financially possible to extend lines to newly-developed fields. It was by this process that the great natural gas utilities of today evolved. The rapid growth of these utilities, the further depletion of the local fields and the insufficient potential reserves necessitated the construction of long, high-pressure lines to the great gas fields of the Southwest.

The science of pipeline construction and operation has been developed to such a degree that it is now possible to extend natural gas service to many communities which have never before enjoyed it, as well as prolong the life of natural gas service to many localities which would have had to resort to substitute fuels.

The gas utility depends for its existence on reliability of service to its customers. Efficient dispatching makes this possible.

The industry has expanded to a point where the movement of the gas depends on one or all of three distinct types of dispatching. These are *Long Lines, Network* and *Distribution.*

Long Lines Dispatching consists of collecting large quantities of gas from numerous sources and directing its flow through hundreds of miles of pipe lines to either network or distribution systems.

Network Dispatching may involve the movement of gas being received from long lines companies, local producing wells, various types of storage and stand-by plants, through thousands of miles of transmission lines to hundreds of thousands of customers scattered over several states.

Distribution Dispatching may range in extent from the serving of gas from one source to one city, to the handling of a complicated combination of natural and manufactured gases of various kinds with various heating values, all within one city or metropolitan area.

This chaper will be devoted to *Long Lines* and *Network Dispatching. Distribution Dispatching* will be covered in another chapter.

Organization and duties of dispatching department

The nature of the dispatching organization, of course, depends on the extent of the individual company's operations and the scope of the department's activities. It must, at least, consist of a supervisor and a sufficient number of trained dispatchers to work around the clock.

It is most desirable that the dispatcher be enrolled from the operating personnel, preferably with some knowledge of the transmission system. He must possess a personality that will demand the respect and admiration of those with whom he confers. He must be diplomatic in his dealings at all times. He must be cool and collected under the most extreme emergencies. He must have the ability to visualize and analyze occurrences quickly even though they have never previously been experienced. He must know the operating limits of the system, the contractual obligations of his company and, most important of all, the market requirements under all conditions. He must be resigned to working nights, holidays and weekends and be ready to respond to call for special duty.

The principal duty of the dispatching organization is to coordinate the activities of the various departments so that the gas will be delivered from points of receipt to its many customers, regardless of the amount, the time, or the conditions. To accomplish this, the dispatcher must take four definite steps. *First,* estimate the demand; *second,* order the required gas turned on at the source; *third,* issue orders to maintain pressures that will deliver this quantity of gas to the market; and *fourth,* check terminal deliveries to ascertain with what degree of accuracy his objective is being carried out.

One of the unusual conditions under which a dispatcher operates is that he is obliged to direct the activities of personnel of other departments with regard to the delivery of the gas, without going through the usual lines of authority.

Successful operation under these conditions can only be accomplished by developing complete understanding of one department's obligation to the other. It cannot be established by command, but must be acquired by cooperation and fair dealing in day-by-day performance of their duties.

The dispatcher must determine the most suitable operating pressures for compressors, balance the load between stations to effect the most economical operation, maintain minimum pressures consistent with good service, and reroute gas to allow isolation of lines for repairs. To keep the system constantly in balance, the dispatcher makes adjustments based on frequent reports of operating conditions from strategic points. Often the quality of the incoming gases varies to such an extent that it requires his constant

surveillance and remedial action. In states where production is controlled to prevent waste and excessive withdrawal, it is the dispatcher who maintains deliveries within the established limits. It also requires vigilance on his part to prorate withdrawals to prevent discrimination against individual producers. A dispatcher whose company operates under the jurisdiction of the Federal Power Commission carries the responsibility of operating within very exacting limits as established by that Commission.

Maintenance of operating records is of the utmost importance. They serve as a history of the company's operation, a guide for future dispatching and are frequently used by other departments.

It is believed by many that dispatchers have a slack season during the Summer. It should be pointed out that this is the season when the dispatcher is busy rerouting gas in preparation for line repairs, adjusting compressor loads to permit engine overhauling, planning and executing stress testing of pipelines and, where underground storage is involved, he has a particular problem of directing the flow to the storage areas. During hot weekends and holidays most employees of a gas company are concentrating on their favorite sport or just trying to keep cool. That's when the dispatcher is laboring with problems of handling the incoming gas which at times take serious proportions.

Description of dispatching facilities

The modern dispatching office is equipped with a large-scale map showing the company's physical property, such as transmission lines, compressor stations, regulating stations, check valves, gate valves and connections. It also shows markets served, rivers, township and county lines, highways and railroads. It is constructed in such a way as to permit the insertion of various colored pins to indicate the position of gate valves. Since the dispatcher directs their operation, it is imperative that he knows their functioning at all times. The use of this map is a logical way of keeping abreast of the operation of the transmission facilities.

He also has access to other maps showing such information as farm names, detailed pipeline and regulator information, length of lines and type of construction. These maps are used by the dispatcher in planning line repairs or locating line trouble.

Comptometers and calculating machines are used extensively, particularly in the preparation of daily estimates of gas requirements and of daily sales reports, and in the determination of gas deliveries, and line capacities. Weather-indicating instruments provide a valuable service to the dispatcher in keeping him in constant touch with the current weather and in helping him to anticipate weather changes. In connection with this, a baragraph and a recording thermometer are most desirable.

The central dispatching office is usually located in the company's main office, but if adequate communication is provided, effective dispatching can be accomplished from any point.

Dispatching's greatest requisite is good communications. This may be telephone, teletypewriter, very high frequency radio, ultrahigh frequency microwave, carrier current or a combination of these. Two-way radio is a very valuable adjunct to dispatching, although its use must conform to regulations of the Federal Communications Commission.

Telemetering and remote control equipment, used as an accessory to dispatching, is not always located in the central dispatching office. Due to the long communication lines which are needed and the volume of work required, this equipment is often located in sub-offices close to the respective area of operation.

One of the newer and more modern installations of such equipment was recently installed by long-distance gas pipeline company through the mountainous area of West Virginia, where it makes deliveries to a distributing utility. There are 6 separate installations, the most distant one being 71 miles from the point of operation.

This system makes it possible for the operator at the control point to remotely control delivery and also to receive the line and differential pressures, which permit him to calculate the delivery, from any one of the 6 locations mentioned above. There are 51 separate operations which are performed over one pair of telephone wires, and each is accomplished by dialing a predetermined number. Figure 1 is a typical detailed diagram of one of the 6 installations.

The enormous increase in space-heating sales experienced by most gas utilities in recent years has at the same time placed greater stress on the importance of weather forecasting. Because the supply is generally many hours distance from the market, it is necessary for the dispatchers to have the gas in transit, so that it reaches the market in unison with the temperature change. The policy, established between a gas company and its industrial and interruptible customers, also determines to a great degree the value of weather forecasting.

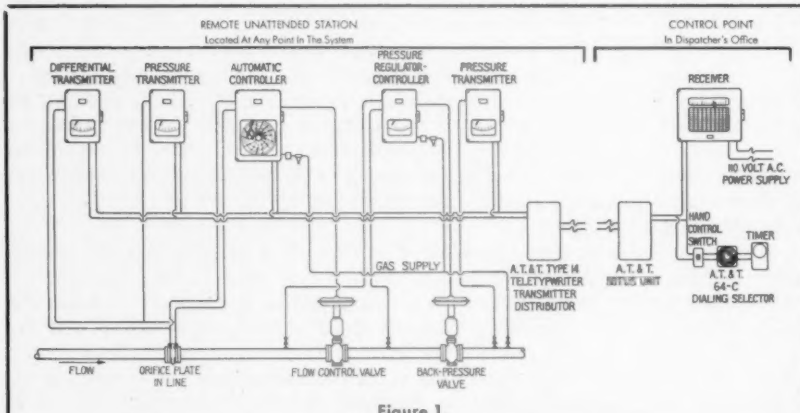


Figure 1.

TYPICAL IMPULSE-DURATION SYSTEM OF TELEMETERING

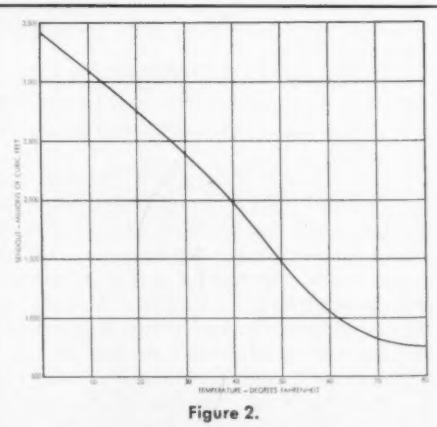


Figure 2.

DAILY SENDOUT VS. TEMPERATURE

There are three types of forecasting service available to the gas industry: regularly-released government forecasts, commercial forecasting, or a company may establish its own forecasting organization that is staffed by experienced meteorologists.

Before the development of underground storage, it was necessary for the dispatchers of most companies to follow the hourly fluctuation in market demand by adjusting pressures in the producing fields. This technique is still used in a minor way, but the dispatcher now depends on the manipulation of underground storage to absorb the major part of the market fluctuation. Some fields, due to certain peculiarities of the gas-bearing formations, react better under certain pressure conditions and must be operated accordingly. Contractual obligations to gas producers must be respected at all times.

Transmission line pressures should be maintained at a minimum consistent with good service. There are several conditions, however, when maximum pressures are maintained; namely, to deliver maximum quantities of gas, to pack the lines in advance of a heavy demand, in anticipation of an emergency or an unexpected request for gas. Careful manipulation of pressures on transmission lines serving markets tends to improve the daily load factor at the source of the gas.

In long transmission lines the balancing of compressor loads is definitely an economic factor and, when there is a need for maximum line capacity, the maintenance of maximum pressures is highly important.

The network dispatcher's obligation ends at the town border station, but he must maintain sufficient pressure to deliver the gas through the distributing medium-pressure system, plus a reasonable safety factor. These pressures are usually established through consultation with the distribution personnel.

During the Summer, the pressures on transmission lines which are only serving markets are materially reduced, but lines carrying gas to underground storage fields are usually operated at near-maximum pressures. High pressures not only increase the flow of gas to the storage fields, but serve to increase the capacity of storage compressors and hence increase the introduction of gas into the formation being used as a storage medium.

Underground storage

The use of underground storage, particularly in the Appalachian area, has made it possible to construct and operate many pipelines from the Southwest which otherwise would not have been economically feasible. Its value to these long line companies results from having placed them in a position of purchasing gas and operating their facilities at near 100 per cent load factor.

The value of underground storage to the utility is in proportion to the storage area's proximity to the markets served. The principal advantages are: (1) permits the utility to purchase gas at a much improved load factor, resulting in lower cost; (2) allows accumulation of great quantities of gas, usually at high pressure, readily available to serve sudden increases in the market demands; and (3) makes possible the year-around operation of local, partially-depleted wells, which could not be economically operated on a part-time basis.

This program has made available to the dispatcher great quantities of gas on short notice, but its dispatching to-and-from the storage areas has added to his year-around responsibilities.

The chief dispatcher's knowledge of the characteristics of the various pools operated by his company makes his assistance very valuable in scheduling its input and withdrawal, so that the greatest quantity possible may be obtained during the time of greatest demand.

Complications of network systems

The network dispatcher's problems are many and varied due to the complicated system which practically entails the problems typified by all types of dispatching. His responsibility further increases in rapid strides as the network sys-

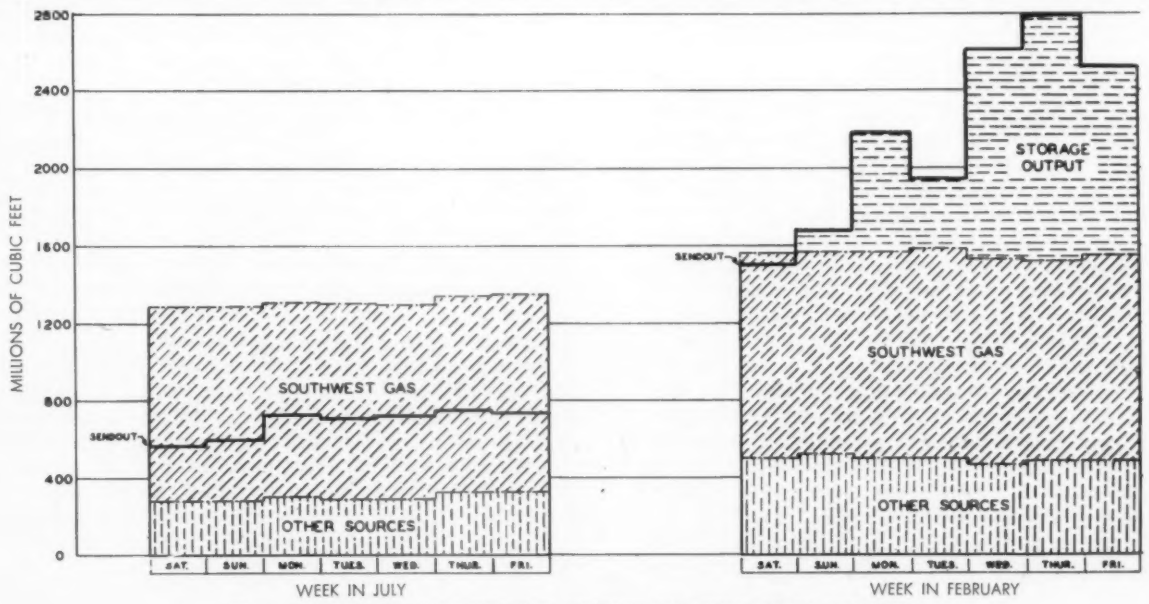


Figure 3. EFFECT OF UNDERGROUND STORAGE ON DISPATCHING OPERATION

All Gas Above Sendout Line Represents Storage Input

tem grows, particularly if its operation spreads over a large area.

Even when the existing temperatures over the area are fairly uniform, the balancing of the load presents a continuous problem, but when a storm moves across the area, a wide range of temperatures can be expected, occasionally as much as 20 or 30 degrees. This condition presents a definite problem of readjusting deliveries, particularly when the gas enters the system from several points in varying volumes.

If the storm should be sufficiently severe to indicate a potential gas shortage in one part of the system, the dispatchers, by quickly adjusting deliveries, can relieve the situation without injury to other areas where demands are less. While this condition presents a problem for the dispatchers, it is an advantage to the company since it permits better utilization of the available gas.

The dispatcher must know the relationship of space heating to domestic, commercial and industrial users in each of the areas served, so that he can handle them according to their individual characteristics.

A long line system maintains a high load factor on the system by various methods. Where storage fields are available near a pipeline terminal, they are used as warehouses for storing the gas during off-peak periods for use during periods of heavy demand. Where nature has not provided these natural warehouses, it is usually customary to sell gas to interruptible customers, who are equipped to switch quickly from natural gas to a substitute fuel during periods of heavy demand. In any event, it behooves the dispatcher to schedule the compressor and pipeline maintenance, so that all available capacity is at his disposal when a cold wave approaches. It is his responsibility to forecast the load, resulting from the approaching cold wave, so that interruptible customers may be notified sufficiently in advance to allow time to convert to stand-by fuel.

In network systems, the temperature has a tremendous influence on the space heating load. The peak demand, therefore, occurs on a low temperature day frequently accompanied by high wind. The dispatcher's planning for the peak day is a continuous program; active preparation, however, begins with the announcement of an approaching cold wave, usually the preceding day.

After all the available weather information is collected, and a tentative temperature and wind velocity are established, a study is made of the varying effect on the area served. With a complete record of past performance, the dispatcher is in a position to estimate the demand very accurately. If the demand is found to be extremely heavy, reserve wells are ordered turned into the line at a predetermined time and stand-by plants are requested to be prepared for immediate operation. If the anticipated demand exceeds the gas available or the capacity of facilities, industrial customers must be requested to curtail their use on an equitable basis in proportion to the estimated shortage.

Most industries require several hours notice of the effective hour of curtailment in order to activate their stand-by facilities, or to reschedule their production, or to prepare the plant for shutdown. It is the dispatcher who issues the curtailment order or furnishes the management with the information by which such action can be taken.

Checks are made during the night to ascertain if pressures are being maintained and lines are being packed as planned. Men are dispatched to town border and other important regulating stations during the early hours of the morning to determine if they are performing properly and if the delivery of gas is sufficient to supply the approaching demand.

This is only the beginning of the dispatcher's duties. The greatest portion of his time is spent on the telephone or radio checking with all areas served, as well as the sources of supply, so that the gas is kept moving from its source to the many points of consumption in the proper quantities.

A continuous study of the approaching weather is in progress, so that any deviation from the original forecast may be anticipated as early as possible and adjustments in deliveries can be made accordingly.

A company provides equipment and maintains gas reserves that will be needed to meet a demand which may occur only once over a span of several years. When this time arrives it behooves the dispatchers to utilize these facilities with the maximum possible effectiveness.

Emergencies are usually the result of line breaks, compressor failure or gas shortage. In all cases, the responsibility for directing operations is delegated to the dispatching organization.

The dispatcher on duty must, of course, be able to take over and handle an emergency until he can obtain aid from his chief or the person delegated to stand-by to act during such an occasion. No two emergencies are exactly alike; therefore no definite plan of procedure can be previously outlined.

There are certain definite principles, however, that apply to all emergencies and these may be set up beforehand in manual form and distributed to all who are concerned in the handling of emergencies. It is not only necessary for the dispatcher to plan carefully the course of procedure which will supply the markets during an emergency, but it is equally important that the system be restored to normal after the trouble has been corrected. In other words, after the party is over . . . the dishes have to be washed.

The dispatcher's participation in the handling of emergencies is not always confined to his own system. The many cross-country pipelines and their interconnections afford most dispatchers and particularly the long line dispatcher, the opportunity or the obligation to help other companies who are in trouble.

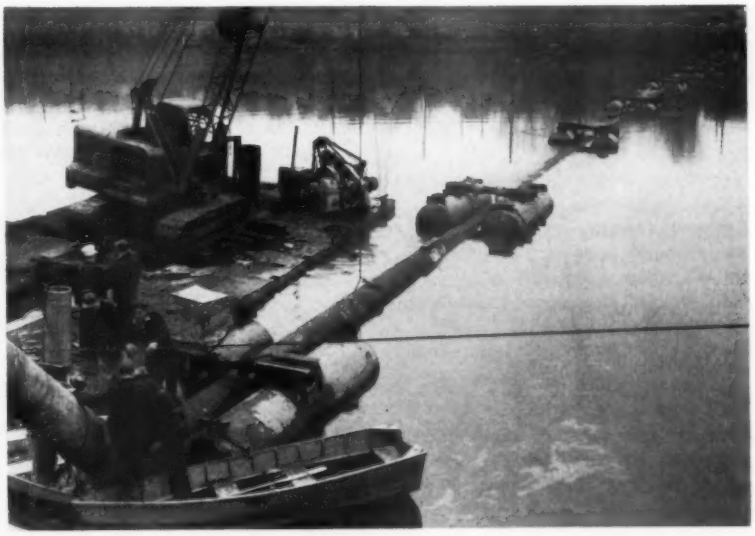
The advantages of these many interconnections have been borne out many times during emergencies arising from line breaks and gas shortages. The greatest opportunity for one company to assist another during an emergency is not usually accomplished by physically operating interconnections, but by readjusting deliveries between companies at established points of delivery. During the gas shortage of the post-war years, aid was rendered to a stricken area at a distance of 500 miles, which required the cooperation of 5 intervening companies.

Many companies have developed their dispatching organization to a point where it is also active in planning transmission facilities, estimating future requirements, making sendout reports, testifying before regulatory bodies and participating in numerous other activities. There seems to be no formula by which the minimum or the maximum activities of dispatching can be established. The capabilities and the training of the personnel and their acceptance by the management seem to determine these limits.

This chapter on Pipeline and Network Gas Dispatching was prepared by S. A. Chadwell, chief system gas dispatcher, Columbia Gas System Service Corporation.

News of the Gas Industry

DUAL 16-INCH CROSSING OF SCHUYLKILL RIVER



The construction of this dual 16" crossing of the Schuylkill River near Conshohocken, Pa., for Philadelphia Electric Co. this past winter, provides a link of the additional transmission mains required to supply the fast growing Delaware Valley area. The contractor is Fulghum Contracting Corp.; field inspection is by United Engineers & Constructors Inc.

Plans Set for Montreal Conference

An intensive program covering the distribution, motor vehicles and corrosion branches of the gas utility and pipeline industry will be presented by the operating section of American Gas Association at a four-day conference in Montreal, Can., April 20 through 23.

Delegates will be welcomed at the opening session by P. W. Geldard, The Consumers' Gas Co., Toronto, as chairman of the AGA distribution committee.

Robb Quinby, The Brooklyn Union Gas Co., will discuss the financial needs of the gas industry and James Webb, Consolidated Edison Company of New York, will offer a new approach to meter design, with an open discussion on metering.

Dual luncheon conferences will be held with K. W. Person, Minneapolis Gas Co., presiding at a meeting devoted to construction and maintenance and J. M. Chrisman, The East Ohio Gas Co., as chairman of the conference on meters and metering. W. W. McCartney, The East Ohio Gas Co., will serve as chairman at the afternoon meeting devoted to automotive and mobile equipment.

The general session will be headed by H. M. Blain, New Orleans Public Service, Inc., when subjects, including the progress being made on the new code for pressure piping, distribution system maintenance, mechanization of meter shop operations and odorization, will be discussed by competent speakers.

A third session dedicated to corrosion subjects will be held with J. L. Adkins, The Peoples Gas Light & Coke Co., as chairman. Corrosion controls and protective measures will be discussed at this session which will be carried through as a luncheon conference.

W. W. Gilliss, Jr., Washington Gas Light Co., will head a luncheon conference devoted to customer service and F. G. Sandstrom, Consolidated Edison Co., will be chairman at a luncheon meeting on distribution design and development.

Corrosion, construction and maintenance, and meters and metering will be discussed at luncheon conferences. C. W. Beggs, Public Service Electric & Gas Co., Newark, N. J.; R. C. Holcombe, Philadelphia Gas Works Division, United Gas Improvement Co., and J. T. Stine, Jr., New Orleans Public Service, Inc., respectively, will preside.

Mr. Blain will preside at a general session which will cover some of the distribution problems of utilities. At a meeting on automotive equipment, S. M. Foeller, Michigan Consolidated Gas Co., will serve as chairman. John MacLarty, Rochester Gas & Electric Corp., will preside at a luncheon conference on customer service, while E. F. Trunk, Laclede Gas Co., directs a luncheon meeting devoted to distribution design and development.

Peoples Natural Seeks Rate Boost

Officials of Peoples Natural Gas Co., Pittsburgh, testified at a recent Pennsylvania Public Utility Commission hearing that an increase of $5,300,000 in revenue was necessary to meet increases in costs. Three company executives testified that only $1,300,000 would be retained by the firm to partially compensate for an acute earning deficiency.

H. Donald Borger, vice president and treasurer, said that $1,750,000 was needed to meet rising prices paid to gas suppliers in the Southwest; $1,800,000 for Federal and State taxes; $350,000 for labor costs, and $100,000 for rising costs of materials and other expenses.

The proposed increase, sought last December, was ordered delayed by the PUC until the company's claims could be checked. Both PUC and the City of Pittsburgh oppose the 13% raise that would affect 230,000 customers in 13 western Pennsylvania counties.

MIDWEST INDUSTRIAL GAS COUNCIL

Newly elected officers of the Midwest Industrial Gas Council are, left to right: chairman, Wm. M. Riach, Jr., The Peoples Gas Light and Coke Co., Chicago; vice chairman, John C. Gurche, Panhandle Eastern Pipeline Co., Detroit; and secretary-treasurer, Grover C. Lewis, Public Service Co. of Northern Illinois. The Council held its annual meeting recently in Chicago.

Ask More Natural Gas for NY Area

The NYPSC has been asked by Consolidated Edison Company of New York for permission to introduce natural gas into Manhattan and additional areas in the Bronx.

The company is now piping mixed natural and manufactured gas to 670,000 consumers in Manhattan and 430,000 in the Bronx. The proposed change-over to natural gas, the company estimates, would save $4,700,000 a year in operating expenses.

Conversion to natural gas, if plans are approved by the Commission, would be done at a cost of $22,000,000 in the Manhattan and Bronx areas. The work would take four years.

Panels Set for E. Sales Conference

How to do it discussions will be a new feature at the 1954 Eastern Natural Gas Regional Sales Conference, sponsored by the residential gas section, American Gas Association at the William Penn Hotel, Pittsburgh, April 19 and 20. To provide an interchange of ideas and methods in the promotion and sales of gas appliances, a series of round table discussions will be held each afternoon.

The conference will open with a brief address by J. C. Berwanger, The Ohio Fuel Gas Co., current chairman of the eastern natural gas regional sales council. J. Theodore Wolfe, executive vice-president, Consolidated Gas Electric Light & Power Co., Baltimore, will report on the progress of the Gas Industry Development Program.

"Revolution and Revenue in the Laundry" will be presented by C. E. Bartlett, Ruud Manufacturing Co. J. M. Townsend, Servel, Inc., will speak on market potentials, competitive efforts and other factors

needed in building a profitable gas all-year air conditioning load.

At the afternoon session, James E. West, Washington Gas Light Co., will lead a panel group devoted to gas all-year air conditioning. A second panel will discuss gas house heating under leadership of Frank C. Curro, The Brooklyn Union Gas Co. A third group will discuss gas incineration, with George F. Duggan, The East Ohio Gas Co., serving as moderator.

James O. Nichols, Philadelphia Gas Works, will head a discussion on selling through the dealers. Then will come a round table discussion on water heating under leadership of Charles L. Yost, The Peoples Natural Gas Co.

Thomas H. Evans, Equitable Gas Co., will serve as chairman at the meeting Tuesday morning. Gas refrigeration sales techniques will be outlined by Vernon F. Stanton, South Jersey Gas Co. Christy Payne, Jr., The Peoples Natural Gas Co., will report on the results of one of the ten test cities selected to operate the Gas Industry Development Program.

Robert H. Lowe, The Manufacturers Light & Heat Co., and Tom Evans, Equitable Gas Co., will tell "The Pittsburgh Story" relating present plans and progress.

Miss Mary E. Huck, The Ohio Fuel Gas Co. home service director, and current chairman of the AGA home service committee, will head a discussion on "Home Service and Sales." A second table group will have W. W. Selzer, The Columbia Gas System Service Corp., presiding. The matchless range program will be the subject at that group meeting. A third panel, conducted by Norman Millard, gas utility sales manager, Crosley and Bendix Home Appliance Div., will offer "Selling Gas Clothes Dryers."

Mueller Co Issues Campaign Booklet

A new booklet entitled How To Make Gas Connections Safely has just been released by Mueller Co. Composed of reprints of two-page, two-color advertisements which Mueller ran during its 1953

campaign in AMERICAN GAS JOURNAL, the booklet shows pictorially the step-by-step procedure for installing gas fittings and line stopper equipment in a gas distribution system.

Ask Texas Tax Decision Rehearings

Attorney General John B. Shepperd has asked the U. S. Supreme Court to rehear arguments on Texas' tax on gathering of natural gas—a tax recently ruled unconstitutional by the court. Mr. Shepperd stated that the court made its ruling under a "misapprehension." He said the taking of gas by pipelines for delivery outside of Texas actually constituted part of a sale, and therefore was taxable. The court has ruled out the tax on the grounds that it interferes with interstate commerce. About 100 companies which gather gas in Texas for transport elsewhere have paid some $25 million in the tax. The state will have to pay them back if the Supreme Court decision stands.

New Plant for Robertshaw-Fulton

Ground has been broken for a new 237,000 sq. ft. plant in Long Beach, Cal., to house the Grayson Controls Div., Robertshaw-Fulton Controls Co., which is presently located in Lynwood, Cal.

The new plant is part of an expansion program which the company has underway.

To be built at a cost of approximately $2,500,000, the new plant will increase the

T. T. Arden, center, executive vice president of Robertshaw-Fulton Controls Co., is joined by Mayor Lyman Sutter, third from right, and city councilmen in ground-breaking for new $2,500,000 plant of the company's Grayson Controls Div. at Long Beach, Cal. The young lady is Mary Ann McHenry, designated as Miss Heat Control. Mr. Arden is manager of the Grayson and Anaheim divisions, and is also first vice president of Gas Appliance Manufacturers' Association.

manufacturing capacity of the division. The two factory areas will feature wide span bays of 100 feet and overhead clearance of 16 feet, with high intensity fluorescent lighting throughout.

Grayson Controls Div. celebrated recently its silver jubilee. The division was founded 25 years ago in a two-car garage with two employees.

Texas Illinois Completes Facilities

Daily transmission capacity of Texas Illinois Natural Gas Pipeline Co., one of two major long distance pipelines supplying natural gas to Chicago region utilities, was increased by 134 MMcf upon completion of facilities costing approximately $33,000,000.

With the building program finished and 11 Texas Illinois compressor stations operating, the combined transmission capacity of the two pipeline systems now totals well over a billion cubic feet daily.

Six new compressor stations, five having a capacity of 12,000 hp. and one of 10,000 hp., were placed in service along the 30-inch Texas Illinois line on its 1,400-mile route from Texas to Joliet, Ill.

In addition to expanding its transmission capacity, Texas Illinois is erecting a pipeline suspension bridge over the Mississippi River, and it is anticipated that the bridge will be completed in 1954 and will cost about $3,800,000.

James F. Oates, Jr., chairman of The Peoples Gas Light and Coke Co., Chicago, and board chairman of the pipeline subsidiary, pointed out that the Texas Illinois system, which first went into operation Dec. 1, 1951, now represents a total investment of approximately $172,000,000.

The capacity of Texas Illinois has been raised from the initial figure of about 385 MMcf to about 519 MMcf daily by the added facilities. The dual lines of Natural Gas Pipeline Company of America likewise have a daily capacity in excess of 500 MMcf. Both companies are subsidiaries of Peoples Gas.

As part of the building program, five new lateral pipelines, extending from the Texas Illinois system's main transmission line in Texas to Gulf coast field supply sources, were built to accommodate the new volumes of natural gas required.

The six new compressor stations, each a self-contained community, were built at locations fixed by engineering requirements. They are situated near Wharton, Tex.; Lufkin, Tex.; Texarkana, Ark.; Searcy, Ark.; Perryville, Mo., and Decatur, Ill.

The five original stations are near Conroe, Tex.; Marshall, Tex.; Malvern, Ark.; Pocahontas, Ark., and Hoffman, Ill.

Peoples Natural Altering Stations

Howard M. Joiner, when named chief mechanical engineer of The Peoples Natural Gas Co. in May, 1951, suggested a plan to the late E. M. Borger, then president, for streamlining the company's compressor station facilities. The plan, which was approved, involved the change-over of several of the company's compressor installations from multi-unit to one-man operations.

In the two years since, the Joiner plan has been responsible for changes in five compressor stations. In the conversion, 10 men and 15 engines were displaced at Pew station; four men and two engines at Baum station; four men and three engines at Bentleyville; four men and five engines at Roaring Run station; and four men and four engines at Hill station. In addition, elimination of seven engines at Merwin station is contemplated for the future.

In all, the company has eliminated 29 compressor engines, and operating personnel have been reduced from 26 to five. The plan has also meant that electrical generator and heating systems could be disposed of at these stations. Further savings were accomplished by substituting air cooling for gas cooling by water.

Wave of Refunding Seen —Mainly Bonds

(Continued from page 21)

in prices of equity shares. This may be traced to several factors. For one thing, the belief is spreading among leading economists that the recession in general business will not be as great as previously estimated. In addition, accelerated amortization of new facilities is expected to provide corporate management with a substantial and rising sum of new funds to apply toward financing further additions and improvements to properties, and possibly toward dividend payments to shareholders. No less than $17.6 billion of new plant facilities is eligible for rapid amortization. While planned projects will drop off sharply after the end of the current year, the peak of accelerated amortization will not be reached until some time during 1955 and 1956. A third key factor in the performance of equity shares is the likelihood that dividend payments will be held at a high plane.

While opinions in financial quarters anent the dividend outlook are not unanimous, even the least optimistic do not look for any lowering of dividend disbursements, but merely believe that last year's record-breaking volume of dividend increases by public utility companies will not be repeated. As noted above, however, accelerated amortization will continue to be a favorable factor, especially from the standpoint of enhancing the cash position of the companies affected. And while the point is made by some financial observers that there will be no drastic need for utility managements to repeat last year's heavy crop of dividend increases to afford a base on which to favorably market $500 million or so of equity stock to finance construction, increasing dependence on low-cost bonds and preferred stocks to finance construction, plus additional savings expected to ensue from bond and preferred stock refundings, will impart a fillip to earnings, to bolster the normal increase in net profits which should accrue from greater gross revenues.

AGA Issues Gas Industry Booklet

A compact little booklet entitled A New Look at the Gas Industry has been printed by American Gas Association. Beginning with a presentation of interesting facts about the industry, the book proceeds to give a brief history of gas from the time gas lighting was introduced in Baltimore in 1816 to the rapid growth of the industry that began in 1920.

Written in a non-technical style that will be understood and appreciated by the layman, the booklet points out how gas is essential to the nation, how it is used in the home, and how it is essential to industry. Gas industry regulation, present industry growth, consumption and underground storage are also discussed.

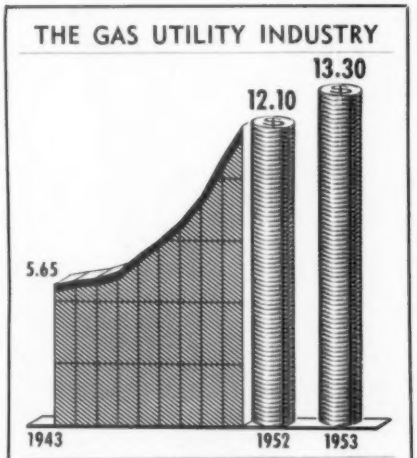
Single copies are available upon request, additional copies may be had at a cost of 10 cents each. It is designed for distribution and circulation among civic, business and social organizations, for press and speaker kits, as background for advertising copy and publicity and as promotional material for special groups.

Holtz Is American Meter Plant Mgr

Donald C. Holtz has been appointed manager of the Nebraska City factory of the American Meter Co. according to an announcement by William G. Hamilton, Jr., president. Mr. Holtz has been factory manager of the Dallas, Tex., plant since 1951 where he was in charge of the manufacture of orifice meters and instruments.

Norton Co Appoints Sales Engrg Mgr

Norton Company of Worcester, Mass., has announced the appointment of William F. Winemiller as manager of the sales engineering department, refractories division, and James L. Miller as refractories engineer.



Graphic representation of growth of the gas utility industry's assets during the 10 years since 1943, to the 6th largest of the United States. Source: American Gas Association.

Brooklyn Union Pays 114 Idea-Men

The Brooklyn Union Gas Co. has announced that in 1953 more money was awarded to employees for suggestions submitted to the employee suggestion plan than in any year since the plan was started in 1932. During the year, $1,340 was awarded to 114 employees suggesting ideas which were put into effect. In all, 395 ideas had been considered, which employees felt would add to safety or increase operating efficiency.

Since the suggestion plan started, $18,700 has been awarded, and of 11,957 suggestions turned in, 2,591 have been adopted.

Suggestions on any phase of the company's business may be submitted whether they pertain to a new service or improve an old one.

Columbia's Dan & Gus Has Had 7,655 Showings

(Continued from page 23)

making the film available, you have also been a great boon to its training men."

"Among the more interesting of the many industrial films which I have reviewed," is how Robert W. Merry, associate professor of Business Administration at Harvard University's Graduate School of Business Administration, describes the film. He brings out the fact that it is quite suitable for undergraduate work in business education, particularly as an introduction to courses specializing in problems of utilities.

Figures on film showings

Cumulative attendance figures, as of January, by Modern Talking Picture Service show that the film has been booked 4,477 times for a total of 7,655 showings to 433,096 persons. The figures, broken down, represent showings to 57,001 men, 25,862 women and 317,363 boys and girls. The rest of the showings have been booked through Columbia Gas System companies.

Several requests for The Legend of Dan and Gus and other Columbia films have been received from foreign countries. However, Columbia has abandoned international bookings because of the difficulties involved in passing customs. The utility had one vexing experience with passing the film in and out of customs for showings in England. But Dan and Gus did make an appearance in Hawaii, before management and employees of Mutual Telephone Co. in Honolulu.

Columbia Gas Has Recruiting Book

As part of its intensive college recruitment program, Columbia Gas System, Inc., has released the 1954 edition of its college recruiting brochure. Copies have been sent to 90 colleges, 60 of which are in or near the company's seven-state, mid-Appalachian operating territory. They are being followed closely by eight recruiters who are rounding up a new crop of engineers to join the system's junior engineer training program after June graduations.

D. R. Edwards, Columbia's vice president and director of employee relations, says the brochures are a most important adjunct and serve as advance billing for Columbia's campus recruiters. They also bring in many written inquiries from other more distant campuses which are not visited by System representatives.

The recruiting brochure, entitled Your Career With Columbia Gas System, begins with the query, are you going to get a job—or launch a career? From that point the booklet gives pertinent information about the company, its operations and its future, and proceeds to describe the advantages offered by Columbia Gas System.

Is the Protection You Buy TIME-TESTED like TAPECOAT®

. . . The Quality Coal Tar Coating

There is one dependable yardstick for measuring the quality of protective material: How does it stand up over years of service?

You don't have to experiment when you specify TAPECOAT. It is quality coal tar coating, and coal tar is nature's own defense against corrosion.

Since 1941, when it was introduced as the first protective coating in handy tape form, TAPECOAT has proved its ability to keep vulnerable steel surfaces in "like new" condition year after year. **That's why it is specified by those who know that continuing protection is the first consideration.**

For 13 years, TAPECOAT has provided dependable protection on pipe, pipe joints, tanks, etc., above ground and under ground.

TAPECOAT comes in handy rolls in widths from 2" to 24". It's easy to apply and the coal tar provides both bond and protection at the same time.

Write for brochure and recommendations on your corrosion problem.

The TAPECOAT Company

Originators of
Coal Tar Tape Protection

1529 Lyons Street
Evanston, Illinois

How Seattle Gas Co. Plans Ahead with City Engineers

(Continued from page 20)

knowledge of the construction of a subway which involved major mains in a downtown low pressure distribution grid, the company was able to make load studies and pressure surveys to determine which mains had to be maintained across the subway, which mains could be retired, and in general coordinate its work closely with that of the contractor. Seattle's mains were shown on the job prints and the contractor's responsibility for protection of gas mains was clearly stated in the job specifications.

Through early contacts and discussions with the contractor what appeared to be insurmountable problems were solved prior to the start of work. The contractor's work, of some 18 months' duration, was at no time delayed by the gas company. A 12-inch cast iron supply main, vital to operations, was kept in service at all times, except for a short planned shut-down. Three sections of 12-inch main in 16-inch casings were set in place across the 66-foot open cut by the contractor at a reasonable cost to the gas company. During the entire construction period the friendliest relations were maintained among the gas company, the contractor and the city engineering department. It is a matter of interest that the project manager on this job received a citation from the State Department of Industries for the safety of his job.

The Seattle Gas Company is able to maintain closer control of its budget through early knowledge of public improvement work. At this time the city engineering department is planning future construction of a freeway through the city which will probably be depressed in some places and elevated in others. A second floating bridge across Lake Washington is in the planning stage. Several grade separations are under construction or are being designed, and the extension of a two-level waterfront viaduct is scheduled for 1955. Construction of a large bridge with clover-leaf approaches will start this year, and plans are being discussed for bridging Puget Sound in the near future. It is evident that the company's mains will be involved in major public improvements in the years just ahead. The cost of this work will be considered in each year's budget. Before preparing the 1954 budget Seattle Gas went to the city design engineer to determine which public improvements were being planned for 1954. He was most cooperative in giving all the information requested. It is disturbing to suddenly find that it is necessary to spend a considerable sum of money that was not anticipated.

In 1953 the city of Seattle spent $10,429,000 on public improvements, including street paving, water mains, sewers, sidewalks and street grading. More than 39 miles of paving was laid in streets, alleys and sidwalks at a cost of $2,055,000. Not included in these figures were several miles of streets that were resurfaced by city crews under street maintenance. Out of a distribution capital budget of only $145,000 Seattle Gas Company spent $26,000 or approximately 18% on gas mains involved in these jobs. Although this was a large percentage of the budget, the estimate in the budget was even higher. Considerable savings were made possible through early knowledge and planning.

Benefits to city engineer

While there are many benefits to the gas company, the city engineer also benefits from planning ahead with the gas company. Certainly there is less delay in the construction of public improvements when there is mutual planning. Lower construction costs can and do result from early planning. A planned job is a safer job for all concerned. Traffic interference and inconvenience to the public are kept at a minimum through proper planning. The city engineer then benefits from public relations.

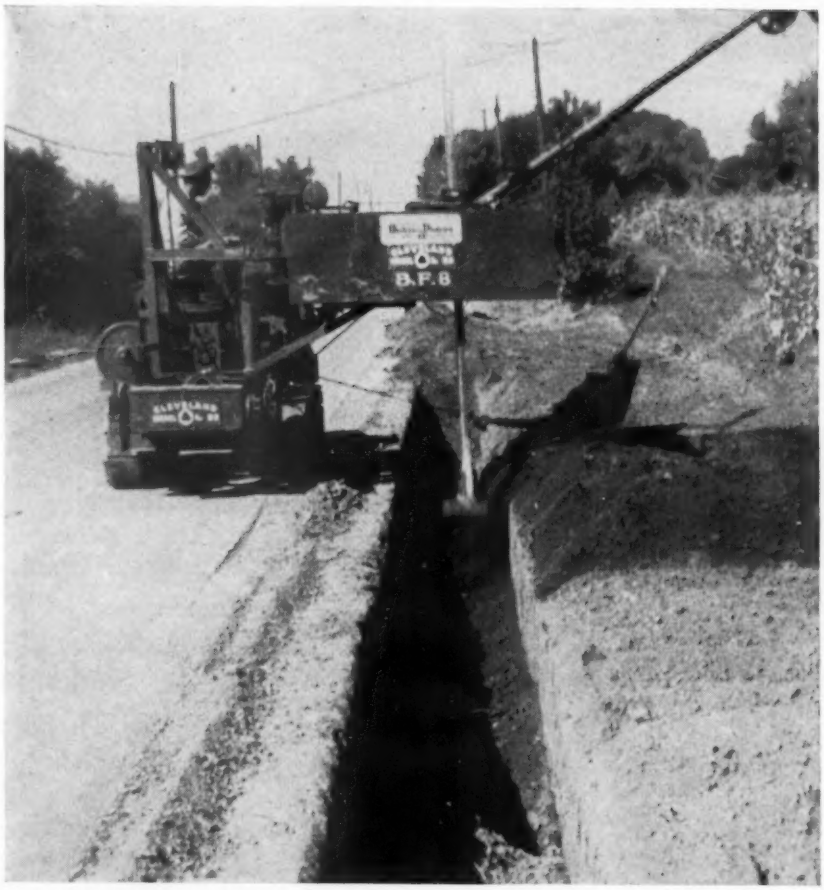
Summary: Know your city engineer. Do your part to cooperate with him. Remember that cooperation is a two-way road. Sell him on the idea that his taxpayers are also your customers. Be reasonable at all times. Do willingly what you otherwise might be forced to do. Do not ask or expect special consideration. Maintain your relations on a proper business-like basis. Do not become involved in local politics. Remember that carefully considered planning ahead with the city engineer results in real benefits to your company, your customers, the taxpayers and to the city engineer himself with the resultant orderly growth of your community.

Adapted from
Pacific Coast Gas Association
Distribution Conference
March 1954

Cascade Natl Buys Consolidated Gas

Consolidated Gas Co., a utility operating in Toppenish, Zillah, Granger, Sunnyside, Grandview, Prosser, and Mabton, all in the lower Yakima Valley in central Washington, was sold to Cascade Natural Gas Corp. according to W. C. Ulett, president of Consolidated.

Cascade Natural Gas Corp., which owns and operates the utilities in Bremerton, Yakima, Walla Walla and Clarkston, Washington; Lewiston, Idaho, and Pendleton, Eugene and Springfield, Ore., is also making arrangements for a merger whereby it will own and operate the utilities in Bellingham and Wenatchee, Washington.



Keeps 4 Backfillers Busy

IN OMAHA, NEBRASKA, the Metropolitan Utilities District keeps 4 CLEVELAND Backfillers busy on construction jobs for gas, sewer and water lines.

The photograph shows how easily the Model 80 Backfiller is operated by only one man. It also shows how the 80, traveling parallel to the trench as it works, holds to an absolute minimum any interference with the highway's normal traffic capacity.

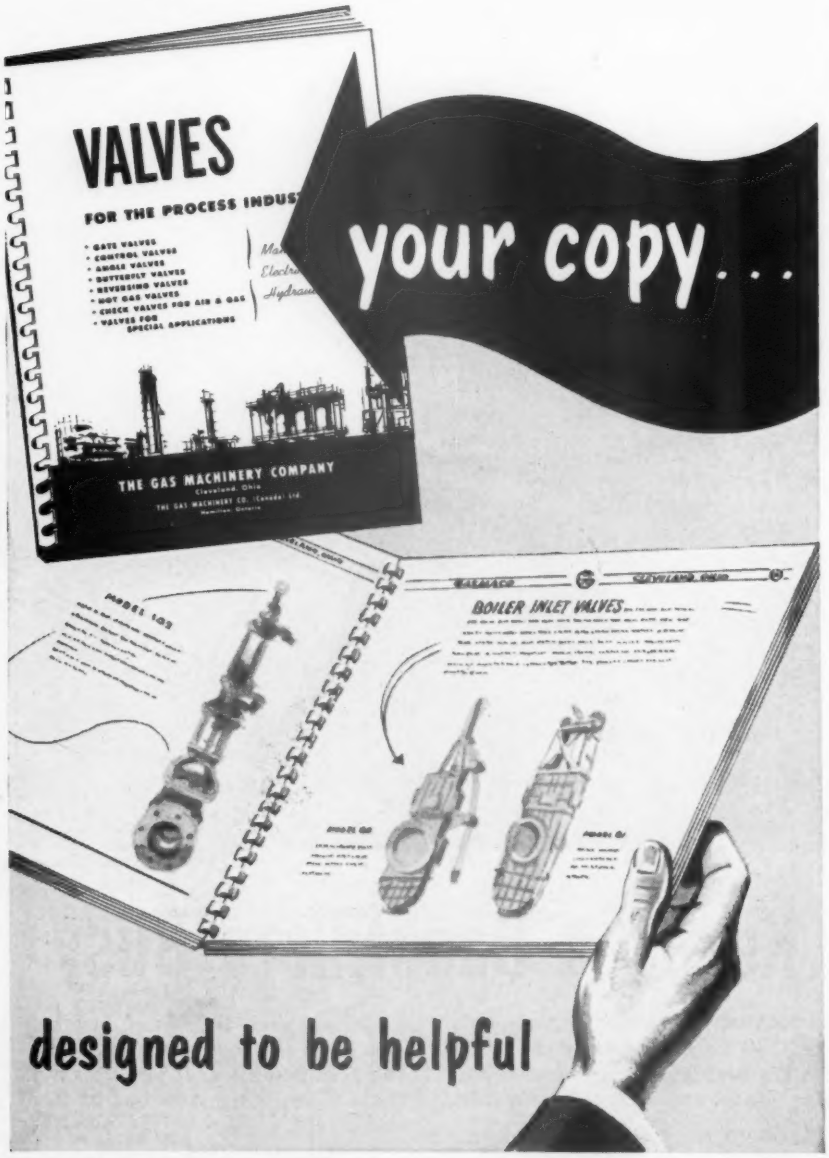
The 80 is not only cleanly filling this good sized trench, it is also compacting it simultaneously with its tamper unit, a standard accessory feature of this versatile machine. The results it is obtaining clearly illustrate its ability to backfill fast and efficiently and at the same time do an outstanding job of compacting the fill. Traveling continuously as it performs both these operations, it conserves on manpower and eliminates the need for attendant equipment.

In addition to backfilling and compaction these Model 80's do side crane work of all kinds, such as the handling and installation of cast iron, steel and concrete pipe, valves, etc.

The repeated purchases of these machines by this municipal utilities body are evidence of the Model 80's ability to deliver consistently satisfactory results through consistent, outstanding performance on a wide variety of job types and sizes.

Write for descriptive literature and specifications, or get the full story on CLEVELANDS from your local distributor.

THE CLEVELAND TRENCHER CO.
"Pioneer of the Modern Trencher"
20100 ST. CLAIR AVENUE • CLEVELAND 17, OHIO



A new 48-page valve catalog, illustrating all types of Gasmaco valves for the process and gas industries, is just off the press.

The Gas Machinery Company began a specialized service to industry in 1902, a service that includes not only valves but complete gas generating plants and industrial furnaces.

Check your requirements with the valves pictured and described in this attractive catalog, or you may have special applications with which we can be of assistance. Write today for *your* copy of VALVES—Catalog A-205.

THE GAS MACHINERY COMPANY
16114 WATERLOO ROAD
CLEVELAND 10, OHIO

Designers • Fabricators • Erectors
Gas Plant Equipment and Industrial Furnaces
THE GAS MACHINERY CO. (Canada), Ltd.
HAMILTON, ONTARIO

NEW BOOKS

A REVIEW OF LITERATURE ON THE RESULTS OBTAINED BY MIXING VARYING AMOUNTS OF OIL WITH INDUSTRIAL GASES BEFORE COMBUSTION AT ELEVATED TEMPERATURES. By C. J. Slunder, C. J. Lyons, W. Gumz and A. M. Hall.

An analysis and review of available literature of the factors affecting the heating of steel, for forging in furnaces fired with gas-oil mixtures, are presented in this book. Since little information is available in the literature, the report deals with the combustion processes, heating rates and scale formation using single fuels in order to evaluate the general principles that might be applied to mixtures of fuels. This literature study was conducted for AGA's committee on industrial and commercial gas research at the Battelle Memorial Institute in Ohio.

American Gas Association, 420 Lexington Ave., New York 17, N. Y. $0.75.

PROTECTIVE ATMOSPHERES. By A. G. Hotchkiss and H. M. Webber.

Written as an aid for individuals such as metallurgists, process and plant engineers, who supervise plant operations, this book should prove valuable in offering an understanding of the various phases of protective atmospheres. Generously illustrated with photographs, charts and tables, and with emphasis on practical aspects, it has been designed to serve as an operating manual. The authors feel that the book will prove to be an aid in choosing the best atmosphere gases and an aid in the application and use of those gases for achieving desired results.

The contents of the book has been divided into nine chapters and a simple listing of the chapter heads is sufficient to show the wealth and scope of the material that is covered. These titles are: typical protective atmospheres; basic chemical reactions of gases used for furnace atmospheres; atmospheres for preventing or reducing oxides; atmospheres for preventing decarburization; atmospheres for carburizing, carbon restoration, and nitriding; instruments for analyzing, controlling, and measuring gases; storage, distribution, and handling of gases; applications of protective atmospheres; and remedies for protective-atmosphere ailments.

Pp. 341 + viii. John Wiley & Sons, Inc., 440 Fourth Ave., New York 16, N. Y. $7.00.

A STUDY OF MORE EFFECTIVE USE OF SECONDARY AIR TO SUPPORT ATMOSPHERIC GAS BURNER FLAMES. By James C. Griffiths, of the staff of American Gas Association Laboratories.

Covering the studies sponsored by American Gas Association research committees on the use of secondary air to support burner flames, this research report, No. 1204, summarizes the findings to date and the methods used in the investigation. Data are developed which relate required secondary aeration for satisfactory combustion to such factors as input rate, primary aeration, burner design and directing of secondary air into burner flames by means of baffle plates and secondary air passageways.

American Gas Association, 420 Lexington Ave., New York 17, N. Y. $0.75.

Company Rights and Liabilities Reviewed in Court Actions

(Continued from page 22)

the power of Johnson to perpetrate a fraud on the plaintiff (Willis) to his damage and injury in the sum of $1,-344.00, because it was on the faith of the bill of sale from the defendants and the possession by Johnson that the plaintiff purchased the equipment from and resold it to Johnson. The plaintiff acted in the utmost good faith and was an innocent person and did not have notice or knowledge that the check which Johnson gave to the defendants was not good."

This decision clearly illustrates the law that if a gas company's official or employee places a purchaser of merchandise in such position that innocent subsequent purchasers have no knowledge that a lien exists on the merchandise, the gas company cannot recover possession of the merchandise.

Sale contract clause

For comparison, see Kramer v. Streeper, 170 Fed. (2d) 371. Here it was shown that one Knetzer, a retail dealer, took delivery of a machine from the seller, the Top Company, for reselling it. The sale contract contained a clause that title to the machine would remain in the Top Company until paid for by the retail dealer. One Kramer purchased the machine from the retail dealer not knowing that the contract existed between Top Company and retail dealer contained this clause.

In subsequent litigation the court held that Kramer was legal owner of the machine, and that it could not be repossessed. The court said:

"In any event Top Company by its conduct, is precluded from denying Knetzer's (retail dealer) authority to sell. We think that Kramer acted in good faith and had neither express nor implied knowledge of any reservation of title in Top Company and was a bona fide purchaser for value."

Also, see First Galesburg National Bank & Trust Company v. Reyelts, 306 Ill. App. 499. Here a distributor permitted a retail dealer to display appliances and merchandise in his show room. The distributor had a lien on the merchandise, but the lien was not recorded. An innocent purchaser purchased certain appliances from the retail dealer.

In subsequent litigation the court held that the distributor could not repossess the merchandise from the innocent purchaser and said:

"A customer in good faith, assuming that Mortenson (retail dealer) had title, purchased the merchandise and in so doing should be protected against the holder of a secret lien of which he had no notice."

Working capital

A reader has asked the question: "What is the correct legal definition of the term 'working capital'? I want this information to use in our present gas rate law suit. Also, what legal effect have Federal income tax laws on a working capital?"

Recently, a higher court answered this question. See Alabama-Tennessee Natural Gas Company v. Federal Power Commission, 203 Fed. Rep. (2d) 494. This court held that the term "working capital", in the context of public utility rate regulation, is the "allowance for the sum which the company needs to supply from its own funds for the purpose of enabling it to meet its current obligations as they arise and to operate economically and efficiently".

Normally, it is contemplated that all operating expenses will eventually be paid for out of revenues received by the gas company, and the need for working capital arises largely from the time lag between payment by the company of its expenses and receipt by the company of payments for service in respect of which the expenses were incurred. The court held:

"But there are time lags which work in favor of the company as well as those which work against it. The company no more pays immediately every liability accrued than do its customers. In determin-

PEERLESS
Type "MP"
ODORIZER UNIT
The Peerless Type "MP" Odorization Unit has been designed to provide a complete odorization setup which is easily installed. This odorizer utilizes the Patented Peerless principle of liquid odorant injection.
LOOK AT THESE ADVANTAGES . . .
• Accurate proportioning of odorant into line.
• Safety tank built in. Cannot flood.
• Leakage is eliminated since all welded piping and packless valves are used.
• It occupies a minimum of space. Only one foundation needed.
• A minimum of piping is required for installation.
• Installation time is reduced.
• Maintaining odorizer is quite simple. Odorizer mechanism easily accessible.
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Peerless Type "MP" Odorizers have many more outstanding advantages, all engineered to give you the most accurate odorizer available.
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P. O. BOX 7193 ★ DALLAS, TEXAS ★ Dixon-8431
REPRESENTATIVES IN ALL PRINCIPAL CITIES

ing the need for working capital, the commission may quite reasonably and properly take into account factors which reduce the need as well as those which increase it."

Also, see Pittsburgh v. Pennsylvania Public Utilities Comm., 370 Pa. 305. This court held that the Public Service Commission may lawfully reduce the otherwise allowable working capital by deducting certain accruals for payment of Federal income taxes. In this respect the court said:

"Federal income tax is included as an item of expense in the computation of the rates which the company will be permitted to charge during the taxable year."

See the following cases: Pacific Company, California Public Utilities Commission, 75 P.U.R.N.S. 379, Michigan Company, Michigan Public Service Commission, 62 P.U.R.N.S. 77 and Long Island Lighting Company, New York Public Service Commission, 18 P.U.R.N.S. 65.

PSC may decide rates

A reader has asked: "Can a court rightfully prohibit a gas company having the Public Service Commission either approve or disapprove a desired increase in gas rates?"

According to a late decision, a court cannot interfere nor prohibit a gas company from carrying its proposed gas rate increase before the PSC particularly if the testimony proves that the company attempted in good faith to negotiate with the city officials for the increased rates.

In Michigan Consolidated Gas Company v. Holbrook, 59 N. W. (2d) 257, the testimony showed:

A lower court granted an injunction prohibiting the Michigan Consolidated Gas Company from applying to the state PSC to fix gas rates in a city. The gas company appealed to the higher court to prohibit the judge in the lower court from taking any further proceedings in the case which will prevent the gas company from applying to Michigan PSC to fix the rates, and to require the lower court judge to enter an order cancelling or withdrawing its injunction, thereby allowing the company to carry its case before the Commission and let it decide whether an increase in gas rates in the city was justifiable.

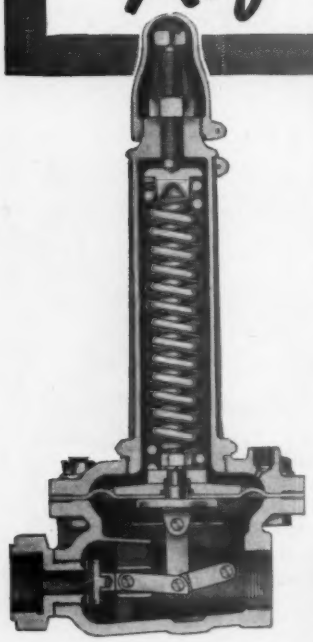
The gas company presented evidence that it had in good faith had negotiations with the city for increased rates for several months. The higher court held in favor of the gas company, and said:

"Neither the circuit court nor the city should in any wise interfere with the gas company's presentation of the matters before the Commission. The city or the gas company, if dissatisfied with the results before the Commission, has its statutory appeal. The trial lower court abused its discretion in granting the injunction. The writs of prohibition and of mandamus prayed for by the gas company in its petition shall issue restraining defendant judge, from interfering with petitioners (gas company) proceeding before the Michigan Public Service Commission."

For comparison, see City of Mt. Pleasant v. Consolidated Gas Company, 325 Mich. 501. Here the higher court held that a lower court can take jurisdiction away from the Public Service Commission, in deciding whether a gas company's proposed increase in rates, if the testimony shows that the gas company's franchise in the city contained the requirement or a clause that the gas company could carry its case to the state PSC after negotiating in good faith and further the testimony shows that the gas company had not negotiated in good faith with the city. This court said:

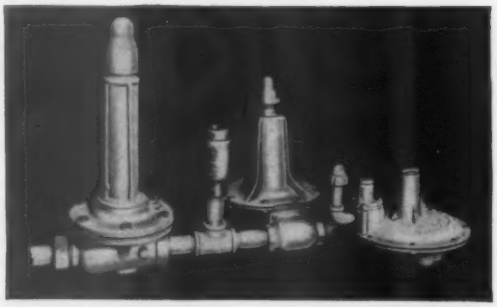
"It is claimed that the matter is primarily one for determination by the Commission when its jurisdiction is invoked, and that the court should not undertake, by injunction, to direct, control, or limit the procedure of the Commission in advance of action thereby. Defendant's (gas company) position in this respect is, we think, well taken."

IN THE HIGH PRESSURE FIELD
THERE IS SAFETY
IN Reynolds...



Accurate, Safe Control

of tremendous pressures is an ever present problem in the gas field. Reynolds field Regulator illustrated at left is one of the many high pressure regulators built by Reynolds. It is thoroughly tested and proved in service. It handles up to 1,000 pounds safely reducing same to pounds. For more than fifty-five years Reynolds has designed and built gas regulators. Safety, accurate performance, years of service—these are some of the built-in factors responsible for Reynolds enviable position in the Gas Control Field.



Reynolds Gas Regulator Co.
ANDERSON, INDIANA, U. S. A.
GAS CONTROL SINCE 1892

NEW BULLETINS

HONEYWELL AIR-OPERATED BUTTERFLY VALVES. This new bulletin, which replaces the company's catalog 1700, contains specifications of Continental butterfly valve bodies and the manufacturer's new series 800 diaphragm motor operators. Complete tables of allowable pressure differentials are included to facilitate the selection of properly sized bodies and operators. Pattern specifications, mounting dimensions, weights, construction features, and design data are covered in the bulletin.

Bulletin 1701 Air-Operated Butterfly Valves. Pp. 12. Minneapolis-Honeywell Regulator Co., Industrial Div., Wayne and Windrim Avenues, Philadelphia 44, Pa.

HANDLING SHARPLES GAS ODORANTS. PHYSICAL PROPERTIES SHARPLES GAS ODORANTS. Two new bulletins have just been issued by the manufacturer. The first bulletin presents information about Spotleak 1008, Spotleak 1009, Pentalarm 86 and Pentalarm 1004. It contains detailed information on odor intensity, explosive properties, toxicity, and storage, handling and equipment recommendations.

The second bulletin, on the physical properties of the odorants, lists the characteristics and properties of Spotleak 1008, Spotleak 1009, Pentalarm 86 and Pentalarm 1004 in tabular form. In addition, seven graphs show vapor pressure vs. temperature, viscosity vs. temperature and specific gravity vs. temperature relationships and the solubility of each odorant in methane at gauge pressures of 0-1450 psi.

Bulletin Sharples Report 53-6. Pp. 4. *Bulletin Sharples Report* 54-3. Pp. 16. Sharples Chemicals, Inc., 1100 Widener Building, Philadelphia 7, Pa.

HONEYWELL SERIES 800 DIAPHRAGM MOTOR VALVES. Diaphragm motor valves of the manufacturer's series 800 line, with double seated, single seated, low flow, Venturi and three-way bodies, are described and illustrated in this new bulletin. Information also is presented on valve actuators and options and accessories. The bulletin contains complete specifications and features of each type of motor valve, including ordering information, trim and mounting specifications and body specifications.

Bulletin Catalog 800 Honeywell Series 800 Diaphragm Motor Valves. Pp. 36. Minneapolis-Honeywell Regulator Co., Industrial Div., Wayne and Windrim Avenues, Philadelphia 44, Pa.

SPRAGUE DUST TRAPS. This informative brochure describes the manufacturer's straight and angle type dust traps. The bulletin points out that the company has brought to the gas industry the first all-metal, economical and effective dust trap which combines centrifugal force as well as porosity to filter out dust particles down to 10 microns in size. Methods of installation are presented for use with regulator and meter and with combination meter and regulator. Component parts of the dust traps are described and pictured.

Bulletin Sprague Dust Traps. The Sprague Meter Co., Bridgeport, Conn.

ROCKWELL LARGE CAPACITY GAS METERS. This new bulletin has been designed to facilitate the correct ordering of parts for the manufacturer's large capacity gas meters which are used in large industrial installations, town border stations, etc. It presents illustrations of gas meter parts for the company's No. 2½, 3, 4, 4½ and 5 gas meters, information on how to order old style parts, diaphragm assembly repairs and parts, and special parts. The illustrations are numbered, with corresponding numbers on pages where there are descriptions of the parts, part numbers and list prices. The bulletin is prepared so that revised pages may be inserted at a later date.

Bulletin S01.4.2. Rockwell Large Capacity Gas Meters. Pp. 21. Rockwell Manufacturing Co., 400 No. Lexington Ave., Pittsburgh 8, Pa.

HONEYWELL REMOTE BULB THERMOMETERS. This amply illustrated bulletin is a catalog of the manufacturer's remote bulb thermometers and covers selection data, recorders and indicators, pneumatic control, electric control, program control, psychrometers, bulbs, tubing and fittings. Information is presented covering application, construction features, specifications, and a supplementary information section which contains information on charts and scales, dimensions of instruments, ordering information, and brief references to valves and related instruments.

Bulletin Catalog 6709 Honeywell Remote

IRON SPONGE

for high efficiency gas purification at high pressures

Iron Sponge is your key to sulfur-free gas at minimum processing cost. Iron Sponge has high efficiency at low pressures or at today's high pressures and high temperatures. It absorbs *more* H_2S, gives long service between foulings, and is easily regenerated. Investigate it for your purification problem today!

CONNELLY, Inc.

3154 S. California Ave., Chicago 8, Illinois
Elizabeth, N. J. • Los Angeles, California

GIANT in Action

GOLDAK MODEL 87 PIPE LOCATOR

Does the work of heavier, bulkier locators yet weighs only 11 pounds complete . . . shows EXACT location of mains, services, valves and stubs. Accurately measures depths of Pipes and Cables. One Man Operation! Rugged Reliability! Economical! Tubes, Batteries and Parts! Comes complete, Ready to use!

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The GOLDAK Company
Leading Makers of PIPE LOCATORS

1540 WEST GLENOAKS BLVD.
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A Complete

MAIN TREATMENT SERVICE

Prepare for Natural Gas

GPM PRODUCTS

"FLUSHALL"
– Dust Removal

"SOLVALL"
– Liquid Phase Gum

"SEALALL"
– Joint Sealing

"WETALL"
– Dust Laying

"FOGALL H"
– Hot Fogging

"FOGALL C"
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"RUBBER CONDITIONER"
– Rejuvenating
Rubber Gaskets

"IRON HYDROXIDE"
– Purification

Discuss your problems with our engineers

★

GAS PURIFYING MATERIALS CO.
3-15 26th Ave.,
Long Island City, N. Y.

Bulb Thermometers. Pp. 46. Minneapolis-Honeywell Regulator Co., Industrial Div., Wayne and Windrim Avenues, Philadelphia 44, Pa.

CLEVELAND MODEL 140 TRENCHER. Special features of design and construction of one of the manufacturer's trencher models are described in this new bulletin. Recent action photographs illustrate the various job applications within the scope of the model—jobs from 18 to 30 inches wide and up to 5½ feet deep. The bulletin contains complete dimensions and specifications including a table of digging wheel and crawler speed combinations available in the company's multi-speed transmission and a table of standard and maximum cutting widths. The text briefly explains how the company pioneered design features—the digging wheel and the full crawler—have enabled the setting of performance records on all types of trenching jobs. Optional extra equipment for special applications is also described briefly.

Bulletin S-117 Cleveland Model 140 Trencher. The Cleveland Trencher Co., 20100 St. Clair Ave., Cleveland 17, O.

THE KING PRESSURE TRANSMITTER. The manufacturer's model 6100F Pressure Transmitter, for use with pneumatically-operated instruments in measuring the pressure of liquids and gases—or the depth, weight, or volume of liquids—in vented and pressurized tanks, is described in this bulletin. It points out that the unit permits measuring many fluids that would otherwise be dangerous, difficult, or impossible to measure, for the liquid or gas is completely separated from the instrument system by a diaphragm. Operating features and advantages, operation of the pressure transmitter, specifications, typical installation and indicators and recorders that are used with the unit are discussed in the bulletin.

Bulletin Catalog 4000. Pp. 4. King Engineering Corp., Box 540, Ann Arbor, Mich.

PAYLOADER UTILITY FOR THE PUBLIC UTILITY. The many uses of the manufacturer's Payloader tractor-shovels are shown by means of many on-the-job photographs in this bulletin. Views of actual maintenance operations on the part of utilities illustrate the variety of ways in which the unit works. Specifications of all six models are included in tabular form showing bucket capacity, dimensions, weights, dumping heights, optional gas or diesel power, four wheel drive, front wheel drive and rear wheel drive variations that are available.

Bulletin Form No. 262. Pp. 8. The Frank G. Hough Co., Seventh St., Libertyville, Ill.

PENN TILTING U-TUBE MECHANICAL FLOW METER. The manufacturer's high-torque mechanical flow meter is fully described in this new bulletin. The bulletin offers all pertinent data including description of operating principle, method of calibration and convenient range change feature. Close-up photographs are used to illustrate inside and outside view of meter. Complete information is given on capacities, pressures and materials of construction. A separate section includes a drawing with dimensions and suggested installation method.

Bulletin Catalog 1027. Penn Industrial Instrument Corp., 4110 Haverford Ave., Philadelphia 4, Pa.

SOLVE THESE FLOW CONTROL PROBLEMS. Standard and custom-built flow control valves for starting, stopping, mixing, blending, metering, measuring or controlling pressure, level, temperature and expansion in refrigeration, heating, air conditioning or industrial applications are illustrated in this new bulletin. Brief descriptions are included on capacity ranges, connection and orifice sizes and lift, for each gas, oil, liquid or refrigerant control illustrated. A summary of solenoids, expansion, evaporator pressure, water regulating, filter, drier, check, oil flow and thermomatic gas controls available from the manufacturer.

Bulletin Solve These Flow Control Problems. Pp. 4. A-P Controls Corp., 2450 N. 32nd. Milwaukee 45, Wis.

WORTHINGTON EQUIPMENT FOR INDUSTRY. Information about special features, types, sizes and capacities of the manufacturer's various product lines of industrial equipment is presented in this bulletin. It describes the application of each of these lines in various industries. Among the equipment described are: condensers and coolers; horizontal and gas engine refrigeration compressors; oil, gas and dual fuel diesel engines; steam power plant equipment; steam turbines; condensers and ejectors; centrifugal pumps and rotary pumps.

Bulletin WP-1099-B61. Pp. 16. Worthington Corp., Harrison, N. J.

WHEELCO INSTRUMENTS FOR COMPLETE PROCESS CONTROL. Describing the complete line of Wheelco instruments for industrial process control application, this bulletin offers information about recorders, controllers, indicators, combustion safeguards and control accessories. There is a discussion of the company's electronic link, a simple no-contact linkage between the precision, direct measuring unit and the automatic control and recording system which gives instantaneous control and recording action.

Bulletin F 5633-1. Pp. 4. Wheelco Instruments Div., Barber-Colman Co., Rockford, Ill.

BRISTOL FURNACE AND OVEN CONTROL INSTRUMENTS. This new bulletin contains a listing of furnace and oven control instruments which are carried in stock by the manufacturer. These stock instruments include indicating pyrometers and controllers for permanent mounting or portable use, indicating thermometer controllers, traveling oven recording thermometer and Pyrotrol combustion safeguards. Other control accessories, such as thermocouples and protection tubes, and the manufacturer's potentiometric test set, also are shown.

Bulletin No. P1262. Pp. 2. The Bristol Co., Waterbury 20, Conn.

PORTABLE POTENTIOMETER INDICATORS. Two portable temperature indicators, the potentiometer indicator and the resistance thermometer are described in this new bulletin issued by the manufacturer. These instruments are used by industry for periodic temperature tests to spot impending troubles in equipment such as heating units and test furnaces, which may not warrant continu-

ous measurement. The bulletin describes in detail the operating adjustments, features of design, test circuits, measuring elements and instrument specifications. There is a listing of standard scales available, covering temperatures from —200°F to + 2,800°F.

Bulletin A-303-1. Pp. 8. The Foxboro Co., Foxboro, Mass.

VERTICAL ATMOTROL MUFFLE FURNACES. The manufacturer's Atmotrol vertical type muffle furnaces are described in this bulletin. It includes a detail construction drawing, depicting important design features, photographs of typical applications with types of parts being heat treated, and descriptions of accompanying equipment—controlled cooling pits and prepared atmosphere generators. Engineering data and charts on the application of RX atmospheres to heat treat processing are included.

Bulletin SC-165. Pp. 4. Surface Combustion Corp., Toledo 1, O.

PENN PRESSURE GAGE-PNEUMATIC TRANSMITTER. This unit combines the company's pneumatic transmitter with a quality pressure gage for remote indicating, recording or controlling of pressures. The combined unit is fully described in this bulletin. Among the transmitter advantages which are listed are safety features, low maintenance, simplicity of design and function. The combination unit is particularly suited for remote indications or recording in hazardous locations where it is desirable to avoid electricity, the bulletin points out. Photographs illustrate the transmitter mechanism showing back and front view. Full data given on capacities, pressures, materials of construction and operating details.

Bulletin 1025. Penn Industrial Instrument Corp., 4110 Haverford Ave., Philadelphia 4, Pa.

PYROMETER THERMOCOUPLE CALIBRATION DATA. The new tables found in this bulletin are based on data recently released by the National Bureau of Standards. Adopted by the scientific apparatus makers association and the instrument society of America, the new tables are corrected to the absolute volt and to the international temperature scale of 1948. The Iron-Constantan table also has been corrected to a new curve which has been adopted by SAMA.

Bulletin P1259. The Bristol Co., Waterbury 20, Conn.

NEW EQUIPMENT

Recorder-controller

A new line of recorder-controller instruments with a wide range of industrial uses for applications which include recording

and control of temperature, conductivity, strain, force, position, pressure, and for telemetering, these instruments require no batteries or standardizing circuits and operate on the null-balance principle using AC signal actuation. A range of nickel, tungsten, and platinum resistance temperature detectors is available, covering temperature of minus 200°C to plus 500°C (minus 328°F and plus 932°F). All except the platinum bulbs feature linearized chart scales. A full range of control forms, both electric and pneumatic, is available.

Null-Balance Recorder-Controllers. Fielden Instrument Div., Robertshaw-Fulton Controls Co., 2920 No. 4 St., Philadelphia 33, Pa.

Automatic boiler

For light oil, heavy oil, gas or combination gas-oil firing, the company's Powermaster packaged automatic boilers are available in standard sizes ranging from 15 hp. to 500 hp. for pressures to 250 psi. The boilers are designed and built to ASME boiler code requirements, approved by Underwriters' Laboratories, and are fully guaranteed by the manufacturer. As delivered, the Powermasters are fully equipped and completely wired for quick installation.

Powermaster Packaged Automatic Boilers. Orr & Sembower, Inc., Morgantown Rd., Reading, Pa.

Packaged burners

A new series of packaged gas burners, oil burners, and combination gas-oil burners for commercial-industrial heating and power applications, this line includes seven stock sizes. Gas burners range from 3,750,000 Btu input to 24,000,000 Btu input, and oil burners from 25 to 145 gph. Each unit is equipped with an enclosed electrical control panel and with a forced draft fan which will deliver necessary air against a positive furnace pressure. This pressure is said to enable boilers which may be fired with a pressure in the firebox to be operated without stacks; only simple vent pipes to the outside needed. Combination gas-oil models permit quick changeover from one fuel to another. Combination units and straight

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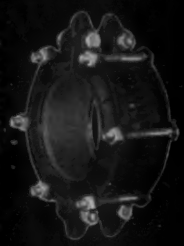

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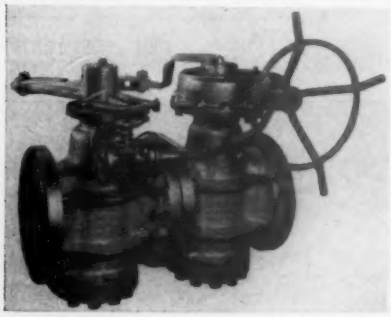
gas-fired units include a low pressure ring-type gas burner, automatic gas controls, air volume control, and an electronic combustion control system. Any type of fuel gas may be used. Each unit is assembled, wired, piped, and tested at the factory, components are integrally mounted on heavy structural steel base.

Petro Packaged Boilers. Petro 3170 W. 106 St., Cleveland 11, O.

Piping transfer blind

A new blind designed to increase the safety and simplicity of mechanical blinding operations in fluid product piping transfer



systems, this blind consists of two straight-way Nordstrom Hypreseal valves butted together in series and operated in unison through a common linkage. A bleeder valve is located between the Hypreseals and is also operated through the same linkage so that when the two block valves are turned to the closed position the bleeder is automatically opened. The manufacturer reports the blind is the first to offer a double block with automatic bleed, eliminating shut-off of upstream and downstream valves and bleeding the section between blinds. Drainage losses are also said to be avoided this way. Use of the new blind, the company states, obviates the necessity for precise piping alignment to prevent binding the blind. As an important safety feature, particularly where LP gas is used, the blind prevents pressure build-up. Other advantages reported are a tamperproof locking device and simple one-wheel operation.

Rockwell Blind. Rockwell Manufacturing Co., 400 No. Lexington Ave., Pittsburgh 8, Pa.

Backfiller

A one-man operated, big-capacity backfiller for pipelines and heavy construction work, this new machine is said to be a fast efficient backfiller under all types of conditions and especially effective under difficult conditions. Employing a 7′ backfill board, it backfills as it travels, providing continuous operation. Long, wide crawlers give the unit a low ground bearing pressure of 6.2 pounds per square inch. The crawler has double-rimmed sprockets, wheelsand rollers that are anti-friction bearing mounted. Over all width of the unit is 8′, not including the boom. It is 15′ in length, 9′ 10″ high and weighs approximately 22,500 lbs. The transmission provides 48 crawler speeds from 1 fpm to 4.3 mph in either direction. Four separate transmission-controlled line speeds are available for both the pull-in and throw-out cables, ranging from 47′ to 450′ per minute. Both boom hoist and tow winch are hydraulically operated. The adjustable boom can be telescoped from 19′ to 27′ and it can be easily

removed for 8′ hauling width. As a side crane the unit has a 50,000 ft. lb. capacity figured from the edge of the crawler—10,000 lbs. 5 ft. out, 5,000 lbs. 10 ft. out.

Cleveland Model 190 Heavy Duty Backfiller. The Cleveland Trencher Co., 20100 St. Clair Ave., Cleveland 17, O.

Backfill tamper

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AMERICAN GAS JOURNAL
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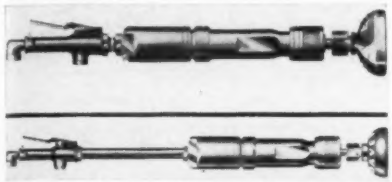
manufacturer. The medium weight tamper has a net weight of 35 lbs. with a length of 47¼″. Body maximum diameter is 3″ and butt diameter is 6″. The hard-hitting tool which the company reports has more than double the work capacity of medium weight

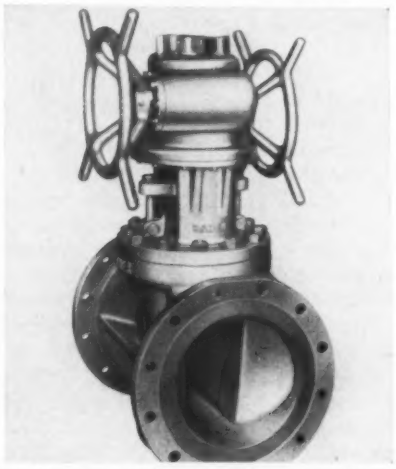


tampers, has a weight of 45 lbs., length 47¼″, body maximum diameter of 3¾″ and butt diameter of 6″. Features include: special locked type butt which eliminates the possibility of the butt coming off the piston during operation; chrome-plated cylinder bore; heavy-duty extension rod; wafer plate valve with differential porting; down exhaust deflector; allow steel hollow butt and replaceable throttle valve bushings. Both tampers can be frame-mounted to permit operation of 3 tools simultaneously, and both are said to possess a high degree of parts interchangeability.

Davey Model DT-32 Medium Weight Tamper, Model DT-42 Heavy-Duty Tamper. Davey Compressor Co., Kent, O.

Plug valve

Two new balanced-type plug valves, the 10″ and the 12″, are available in carbon steel, as well as other materials to meet the demands of most service conditions. Chain wheel attachments for overhand operation are available on both models. Intended for refinery and general service involving high and low temperatures, the valves are gland packed. The valves can be operated with or without lubricant and are equipped with lubrication fittings through which a medium grade of grease may be applied to the packing and bearing surfaces. Two handwheels are provided, one which turns the plug, thus

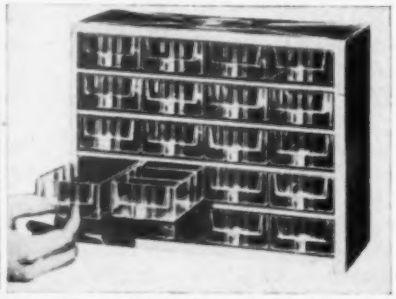


opening and closing the valve, the other to raise and lower the plug in its seat, adjusting it to the proper fit into the body seat. Valves are so designed that the lubricant fills the balance chambers first, and grease will not enter the line unless an excessive amount is applied.

Hamer 10-Inch and 12-Inch Plug Valves. Hamer Oil Tool Co., 2919 Gardenia Ave., Long Beach 6, Cal.

Parts cabinet

A complete line of See-Thru plastic drawer cabinets has been added to this manufacturer's line of small parts storage equip-



ment. The model pictured consists of 20 clear, lifetime-guaranteed plastic spillproof drawers, 5⅞″ long by 2¾″ wide and 1 7/16″ high, in a welded all-steel cabinet. The overall size of the cabinet is 10¼″ high by 12½″ wide by 6″ deep. It has a silver-gray hammer finish and is equipped with rubber feet. Adjustable drawer dividers and identification labels are included. Other drawer units in production include models ranging from 8 to 128 drawers, models with larger size or metal drawers, and portable models with carrying handles. The cabinets have been developed to solve small parts filing and storage problems. Over 750 combinations, to suit user's requirements, can be supplied.

Model J-20 See-Thru Drawer Cabinet. General Industrial Co., 5738 N. Elston Ave., Chicago 30, Ill.

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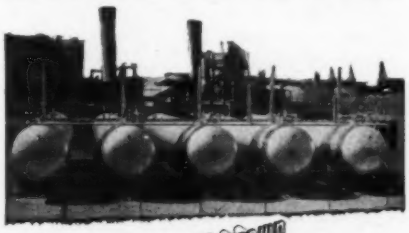

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Oil Gas Produced by Newly Designed Argentina Plant

(Continued from page 19)

garding this point, therefore a plant was designed with a horizontal reactor chamber instead of vertical reactors. This arrangement was chosen for these advantages:

1. Horizontal reactor chamber, giving a larger heat storage without the danger that broken checkers might interfere with gas circulation. In this type of reactor, broken checkers will fall into the lower part of the reactor and will not obstruct the gas. This feature is very desirable, specially for plants designed exclusively for consumption peaks, and which cannot be shut down for overhaul during Winter operations.
2. As the reactor chamber has the same cross section as the regenerators, and there are no inter-connections between these parts of smaller diameter, there will be no pressure drops to affect heating or production.
3. The gas flow for heating and production follows a straighter line than in some other existing equipment.
4. We believe that the stacks placed on top of the regenerators are more convenient than those installed on the floor. As a matter of fact, the stacks have very poor value as heat-recovery equipment, therefore the installation of larger stacks is not justified. Larger stacks take more space, more maintenance without substantially helping the heat recovery and make unnecessary changes in gas-flow direction.
5. The gas flow is downward in the new design. Therefore, the stack effect when the gas heats up has been neglected. This stack effect is considered nil at the working pressures and is amply compensated by some other advantages.

The details of the other equipment such as regenerators, 3-way valves and kegs, do not differ from those used as standard in the gas industry. The burner-injectors are of the standard design and number and placing may vary in accordance with the dimensions or construction characteristics of the chamber. For the first trial the placing of two burner-injectors was found satisfactory, one at each end, as shown on the drawing.

Pilot plant

It was decided to use one of the old existing maunfactured gas generators to experiment with this proposed design. The generator for a district presently being supplied with natural gas was selected. This generator has three bodies and auxiliary equipment that were economically adaptable to the experiment. Two gas producers are required as shown in Figure 2, requiring very few changes. These changes were made:

1. The two superheaters were isolated, with refractory bricks, from the rest of the equipment.
2. The two superheaters were converted into heat regenerators, which were packed with 28 rows of checkers (bricks). These regenerators (R-1 and R-2) were interconnected through the bottom by a reaction chamber. The bottom of the reaction chamber was built flat and with a dome-shaped roof. Premium refractory bricks were used for the job and silicon carbide was used in the most important parts.
3. Water-cooled burner-injectors were placed at both ends of the chamber.
4. Air and steam connections were made at the top of R-1 and R-2.
5. The two gas outlets on each of the two kegs were left untouched to cut down any further expenditures. 3-way valves were used to make the operation simpler.

This equipment was provided with all necessary air, steam and oil supply meters, as well as temperature and flow controls. The connections to the washing towers, condensers and gas holder were left as they were when water gas was produced.

The operation was in this order:

1st Ventilation, Open E2, AC1, DC1.
1st Production, Close DC, AC, A, open V1, close E2, open DP1.
1st Drainage, Close DP1, V1, B2, open A2.
2nd Ventilation, Open E1, AC2, DC2.
2nd Production, Close DC2, AC2, A2, open V2, close C1, open DP2.
2nd Drainage, Close DP2, V2, close B1, open A1.

A = Air	AC = Heating of air
V = Steam	DC = Heating of oil
E = Exhaust	DP = Production of oil

In some cases, to maintain the desired temperatures in different parts of the system, the regenerator with the exhaust cover open was heated with the burner directly under it, while the other cover was closed. At other times both burners operated simultaneously.

The experiments were carried out using the following diesel oil specifications for the heating and production:

Specific gravity	0.890
Paraffinic hydrocarbons	60%
Distillation between 392 and 572°F	80%
Carbon Conradson	0.01%

For other experiments, oil with higher carbon Conradson content should be used, checking the results with the checkers and with the empty chamber.

The experiments were started with an empty chamber (without checkers) and in later experiments carborundum checkers were used to fill in the chamber as shown in the drawing.

More and more checkers were used until the chamber was practically full. The amount of oil was increased as the heat storage was larger, as a result of the increased number of checkers, until the maximum of 14½ gpm was processed.

The experiment was started at a low temperature which was increased slowly on each operation until overcracking, causing a large carbon black formation, was detected. Then new trials were made until the following satisfactory temperatures were determined.

Regenerator top	1,200-to-1,300°F
Regenerator bottom	1,380-to-1,560°F
Reaction chamber	1,650-to-1,740°F

Timing of the cycles was changed until the most convenient time was established as follows:

Heating	100 seconds
Production	90 seconds
Drainage	40 seconds

Under the best operating conditions, gas was obtained with the following analysis:

CO_2	0.9%
Cn Hm	28.7
O_2	0.9
CO	0.5
H_2	19.3
CH_4	38.0
C_2H_6	2.7
N_2	9.0
	100.0%
Btu/cu.ft.	1160
Specific gravity	0.785

The production efficiency of this plant has been 68.5%, taking into consideration only the oil used for production of the gas obtained, or 60.3% if the oil for heating is taken into account. These figures do not include the tar produced.

The general dimensions of this equipment are rather small and the chamber is quite small. The height of the checkers in the regenerators is not enough to use all the heat available. Taking these facts into consideration, these trials may be considered satisfactory. At the present time we have proceeded with trials to process lower grade oils and at the same time to check the refractory materials and working parts of the equipment on a range basis.

Relief Valve Considerations On Meter Sets in California

(Continued from page 17)

Here are some of the basic ideas which are proposed:

1. Relief valves should be constructed of materials that will not be affected by corrosion, either external or internal.
2. Valves and valve seats should be so constructed that they will not stick in a closed position.
3. Discharge stacks and outlet ports should be located so that escaping gas can be vented safely.
4. Pipe fittings and openings should be at least as large as the relief valve inlet, to aid in the preventing of rapid and violent opening and closing of the valve during operation.
5. Should a shut-off valve be placed between the piping to be protected and the relief valve, adequate precautions should be taken so that the valve cannot be closed inadvertently during operations.
6. A shut-off valve should never be placed in the outlet of a relief valve.
7. Relief valves should be set to relieve at or below the maximum safe pressure of the facilities that they protect, and their capacity should be such that the pressure in the facilities shall be no more than 10% over the maximum design pressure at any time.
8. The required capacity should be enough to handle the maximum rate at which gas can be delivered to the set, less the minimum load of the protected facilities.
9. A relief valve, or other pressure-limiting device, designed to prevent overpressuring the customer's piping and appliances, shall be used whenever the inlet pressure to the service regulator exceeds 60 psig.
10. Relief vents shall terminate in the outside air with the open end of the vent so situated that gas can escape freely into the atmosphere and away from openings in a building or other hazardous locations.

Of this proposed set of standards, all the items, except the shut-off valves on the inlet of the relief valve and the allowable inlet pressure to the service regulator, have already been universally agreed upon by the California utilities. The present practices of the various utilities are compared in an accompanying table, with particular emphasis being placed on the two items where variation in practice exists.

Practices of California utilities

All five of the gas utilities contacted made use of relief valves for prevention of overpressuring customer facilities. This relief valve is employed between the primary and secondary, or service, regulator. One of the companies has recently begun using automatic shut-off valves on domestic services off mains delivering at between 60 and 350 psig. Off services which could be subjected to pressures exceeding 350 psig, both automatic shut-off valves and relief valves, operating in series at the inlet to the service regulator, are used.

The company indicated in the preceding paragraph and two other companies install a relief valve on a domestic customer meter set whenever the feeder main exceeds a pressure of 60 psig. One other company sets 75 psig for its maximum, while the fifth company has set its standard at 100 psig. The companies favoring 60 and 75 psig as their limit base their judgment on the rated working pressure of 75 psig for the regulator in general use for domestic installations. The utility favoring 100 psig believes, through their experience, that the service regulator is capable of safely withstanding approximately 150% of rated working pressure.

The standards employed by all the utility companies for large industrial meter sets are very similar. A safety device, usually a relief valve, is employed where failure of a regulator will cause dangerous overpressure to the outlet facilities. Thus, one or more relief valves or a combination of safety devices are installed in a set in order to protect the secondary regulator or the meter should the pressure at the inlet to the primary regulator be greater than the rated safe working pressure of the meter or regulator. The one company that favors the use of shut-off valves would use this device in place of, or in conjunction with, relief valves depending upon the nature of the installation.

Since relief valves will need maintenance at some time, a method of being able to isolate the relief valve from the gas supply must be designed into the installation. One method, favored by some utilities, is to by-pass either the valve or the entire installation. A second method, more commonly used, is to install a shut-off valve at the inlet to the relief valve. This gives rise to the problem of preventing the shut-off valve from being closed inadvertently. Most utilities using this method of isolation either lock the shut-off valve open with a company lock to which most gas department employees have access, or lock the valve open with a special lock to which only key employees have access. One utility company makes no attempt to lock or seal the shut-off valve. Their reason is that greater damage can be done by an unauthorized person closing the inlet or outlet valve of the meter set than by closing the isolation valve.

The general practice of California utilities is to find a suitable location for a relief valve away from the customer's premises when extending service off a high pressure gas main. The venting is normally directly from the outlet port without the aid of a vent stack. Most companies prefer an above-ground installation although there are many instances of below-ground sets generally prompted by the public relations angle. Whenever a suitable location is not available at this preferred distance away from the customer's house, the utility will install the relief valve at the house. A vent stack extended beyond the eaves of the house is normally used in this instance. One company, however, does not feel that vent stacks are necessary for this purpose since only small amounts of gas are usually vented. All of the companies mount stacks on relief valves on industrial sets. In view of the potentially greater amounts of gas to be vented, extreme care must be exercised to insure that these stacks are not terminated near windows or ventilation openings.

The problem of safe venting is further complicated by relocation and construction of buildings occurring after the installation has been completed. Hazardous conditions could arise through a lack of follow-up procedure by the utility. It is the duty of the field supervisor to see that all gas department employees are alert to these possibilities and that prompt action to clear potential hazards is taken when they are reported. Training of such men as the meter readers, who are in constant contact with field installations, would be advisable.

Summary

There are several methods in current use for limiting pressure build-up caused by the failure of pressure control equipment. One method common to the utilities of California to prevent this build-up at residential and industrial meter sets is the relief valve, three types of which are currently being employed. Each of these has its own advantages and disadvantages. No one type can be designated as a standard to be used on all installations, therefore the designer must express his preference after his analysis of the particular installation.

The proposed code now being prepared by the American Standards Association outlines the salient features governing the use of relief valves. The present practices of the California utilities closely coincide with these proposed provisions. All of the companies contacted in the development of this paper recognize the problems involved and are making every effort to create standards which will increase the safety of their operations.

GAS INDUSTRY CALENDAR

April

12-14 AGA Sales Conference on Industrial and Commercial Gas, Edgewater Beach Hotel, Chicago.

13-15 Southwestern gas measurement short course, University of Oklahoma, Norman, Okla.

20-23 AGA Distribution, Motor Vehicles and Corrosion Conference, Mount Royal Hotel, Montreal, Canada.

22-23 Indiana Gas Association, annual meeting, French Lick Springs Hotel, Chicago.

26-28 Mid-West Regional Sales Conference, Edgewater Beach Hotel, Chicago.

26-28 The 1954 annual convention, Southern Gas Association, Houston.

May

9-12 LPGA Annual Convention, Conrad Hilton Hotel, Chicago.

10 (week) 35th Annual National Restaurant Convention and Exposition, Navy Pier, Chicago.

10 (week) AGA commercial gas school, Chicago.

17-18 AGA Industrial and Commercial Gas Section, managing committee, The New Ocean House, Swampscott, Mass.

19-21 GAMA annual meeting, The Drake, Chicago.

24-26 AGA Production and Chemical Conference, Wm. Penn Hotel, Pittsburgh.

27-28 Natural Gas and Petroleum Association of Canada, Prince Edward Hotel, Windsor, Ontario, Canada.

June

20-24 Canadian Gas Association, Banff Springs Hotel, Banff, Alberta, Canada.

27-29 Wisconsin Utilities Association, accounting section annual convention, Dell View Hotel, Lake Delton, Milwaukee, Wis.

28-29 Michigan Gas Association, Grand Hotel, Mackinac Island, Mich.

July

12-16 National housewares and home appliance exhibits, Auditorium, Atlantic City, N. J.

19-23 Western summer radio-television and appliance market, Western Merchandise Mart, San Francisco.

September

8-10 Pacific Coast Gas Association, Vancouver and Georgia Hotels, Vancouver, British Columbia.

8-10 Mid-West gas school and conference, Iowa State College, Ames, Iowa.

13-14 Independent Natural Gas Association of America, annual meeting, Roosevelt Hotel, New Orleans, La.

28-29 Texas Mid-Continent Oil and Gas Association, Baker Hotel, Dallas.

October

11-13 AGA annual convention, Atlantic City, N. J.

18-22 National Safety Council, Chicago.

November

1-5 National Metal Exposition, Chicago.

8-11 American Petroleum Institute, Conrad Hilton Hotel, Chicago.

17-19 Wisconsin Utilities Association, gas and electric sections convention, Schroeder Hotel, Milwaukee, Wis.

28-December 3 The American Society of Mechanical Engineers, Statler Hotel, New York.

February, 1955

7-11 Western winter radio-television and appliance market, Western Merchandise Mart, San Francisco.

March, 1955

24-25 AGA gas supply, transmission and storage conference, Wm. Penn Hotel, Pittsburgh.

April, 1955

12-14 AGA sales conference on Industrial and commercial gas, Hotel Statler, Boston, Mass.

19-21 Southwestern gas measurement short course, University of Oklahoma, Norman, Okla.

25-27 Mid-West regional gas sales conference, Edgewater Beach Hotel, Chicago.

May, 1955

9-13 National restaurant exposition, Navy Pier, Chicago.

16-18 Southern Gas Association, New Orleans, La.

23-25 GAMA annual meeting, Ambassador Hotel, Los Angeles.

June, 1955

5-9 Canadian Gas Association, annual meeting, General Brock Hotel, Niagara Falls, Ontario, Canada.

9-10 Natural Gas and Petroleum Association of Canada, Royal Connaught Hotel, Hamilton, Ontario, Canada.

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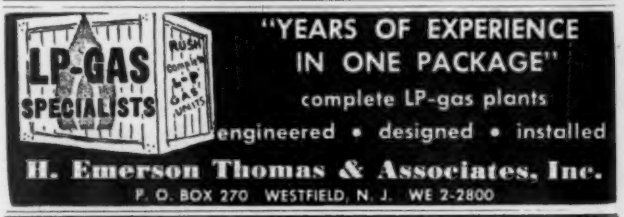
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